SAF-B05-018 Horseshoe Landfill Residual Pesticide Sampling – Soil FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan

2 copies clipped

MITTALDATE

COMMENTS:

SDG

H3206

SAF-B05-018



Date: 5 October 2005

To: Bechtel Hanford Inc. (technical representative)

From: TechLaw, Inc.

Project: Horseshoe Landfill Residual Pesticide Sampling - Soil - Waste Site

600-270

Subject: PCB/Pesticide/Herbicide - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206-LLI prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID 4	asambeleaie		Validar lons	PAPTY (Bate 1977)
J03CJ3	6/7/05	Soil	С	See note 1
J03CJ4	6/7/05	Soil	С	See note 1
J03CJ5	6/7/05	Soil	С	See note 1
J03CJ6	6/7/05	Soil	U	See note 1
J03CJ7	6/7/05	Soil	C	See note 1
J03CJ8	6/7/05	Soil	C	See note 1
J03CJ9	6/7/05	Soil	C	See note 1, 2 & 3
J03CH8	6/7/05	Soil	C	See note 1
J03CH9	6/7/05	Soil	С	See note 1
J03CJ0	6/7/05	Soil	C	See note 1
J03CJ1	6/7/05	Soil	C	See note 1
J03CJ2	6/7/05	Soil	С	See note 1
J03CH3	6/7/05	Soil	С	See note 1, 2 & 3
J03CH4	6/7/05	Soil	C	See note 1
J03CH5	6/7/05	Soil	C	See note 1
J03CH6	6/7/05	Soil	С	See note 1
J03CH7	6/7/05	Soil	С	See note 1

^{1 -} Pesticides by 8081A.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

^{2 -} PCBs by 8082 and chlorinated pesticides by 8151A.

DATA QUALITY OBJECTIVES

Holding Times

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

· Method Blank

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

One field blank (J03CJ9) was submitted for analysis. No analytes were detected in the field blank.

Accuracy

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations.

Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike recovery outside QC limits (122%), all detected 4,4-DDD results were qualified as estimates and flagged "J".

Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicate samples (J03CJ7 & J03CJ8) was submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. All undetected methoxychlor, toxaphene, dalapon, dichloroprop and 2,4-DB results exceeded the RQL. Under the BHI statement of work, no qualification is required.

Completeness

Data Package No. H3206 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a matrix spike recovery outside QC limits (122%), all detected 4,4-DDD results were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

PCB/PESTICIDE/HERBICIDE DATA QUALIFICATION SUMMARY*

SDG: #3206	main it was the second	Fraject: 600-270	PAGE:1-0F-1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
4,4DDD	J	All detects	MSD
Toxaphene	J	All	No MS, MSD or LCS

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFO	BD.			1																	
Laboratory: LLI	SDG: H	13206		1																	
Sample Number	1300. 1	<u> </u>						<u> </u>		Τ				J03CJ9				1			
Remarks								<u> </u>		 -		 		E. Blank							
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Sample Number		J03CJ3		J03CJ4	_	J03CJ5		J03CJ6		1 10301/		Duplicate		E. Blank		3030118		303003		303030	
Remarks				4555		05.05		COME		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05		6/7/05	
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Extraction Date		6/12/05		6/12/05		6/12/05		6/12/05		6/14/05		6/14/05		6/14/05		6/14/05		6/15/05		6/15/05	
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Alpha-BHC	5			1.7		1.7		1.7		1.7		1.7		1.7			יטי	1.7			/ U
Beta-BHC	5			1.7		1.7				1.7		1.7		1.7			υ	1.7			7 U
Delta-BHC	5			1.7 L		1.7		1.7				1.7		1.7			U U	1.7			7 U
Gamma-BHC (Lindane)	5			1.7 L		1.7		1.7		1.7		1.7		1.7				1.7			/ U
Heptachlor	5	1.7		1.7 (1.7		1.7		1.7						1.7	_	1.7			/ U 7 U
Aldrin	5			1.7		1.7		1.7		1.7		1.7		1.7			'U				7 U
Heptachlor Epoxide	5			1.7 ($\overline{}$	1.7		1.7		1.7		1.7	<u>u</u>	1.7 1.7			U	1.7			/ U 7 U
Endosulfan I	5			1.7		1.7		1.7		1.7		8.2					U				7 U
Dieldrin	5		U_	1.7	<u> </u>	1.7	<u>lu</u>	1.7		1.7		1.7	U	1.7			U	1.7			
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4,4'-DDD	5			5.9		1.9		6.3		12		13		3.3		69	4—	7.8			3 U
Endosulfan Sulfate	5			3.3	<u>ر</u>	3.4		3.3		3.3		3.3	U_	3.3			U	3.3			3 U
4,4'-DDT	5			70		23		110		170		210	<u> </u>	3.3		420	_	92	_	9.1	
Methoxychlor	5	17		17 L		17		17		17		17	_	17	-		U	17	_		7 U
Endrin Ketone	5			3.3 (3.4		3.3		3.3		3.3		3.3			Ū	3.3			3 U
Endrin Aldehyde	5			3.3 (3.3		3.3		4.5		3.3		3.3		2.3		3.3			3 Ü
alpha-Chlordane	5			1.7 (1.7		1.7		1.7		1.7		1.7			<u>'U</u>	1.7			7 U
gamma-Chiordane	5			1.7 (1.7		1.7		1.7		1.7		1.7			'U	1.7			7]U
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Laboratory: Lionville Laboratory	oratory In	IC.]																	
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Analysis Date		6/15/05		6/15/05		6/15/05		6/15/05		6/15/05		6/15/05		6/15/05							
Pesticide	1		Q		Q		Q	Result			Q	Result	Q		Q			<u> </u>			
Alpha-BHC	5			1.7		1.7		1.7	U	1.7		1.8		1.8			T	1	T^-		\top
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Delta-BHC	5			1.7		1.7		1.7		1.7		1.8		1.8			1	1	\dagger		_
Gamma-BHC (Lindane)	5			1.7		1.7		1.7		1.7		1.8		1.8			\top		\vdash		\top
Heptachlor	5			1.7		1.7		1.7		1.7		1.8		1.8			_	 		1	1
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Endosulfan II	5			3.4		3.4		3.4		3.3		3.5		3.5			 	 		 	
4,4'-DDD	5			1.9		3.4		7.4		2.7		9.5		150			1	 	$\overline{}$		Т
Endosulfan Sulfate	5			3.4		3.4		3.4		3.3		3.5		3.5			 -	 	 	 	+-
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alpha-Chiordane	5	_	 	1.7		1.7		1.7		1.7		1.8		1.8		<u> </u>	+	 	╆	 	╅
gamma-Chlordane	5			1.7		1.7		1.7		1.7		1.8		1.8			 	 	 -		+-
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Laboratory: Lionville Lab	oratory In	ıc.																		
Case:	SDG: H	13206		L						. 					 					
Sample Number		J03CJ9		J03CH3						<u> </u>				ļ	<u></u>		<u></u> _		<u> </u>	
Remarks		E. Blank										<u> </u>		<u> </u>	 <u></u>					
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Dicamba	100	67	Ü	68	U	L	L_	<u> </u>	⊥	Ĺ	<u> </u>		!		 	<u> </u>		igsquare		┷
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2,4-DB	100	170	U	170	U				1_	<u> </u>	<u> </u>		<u></u>	<u> </u>	 	<u> </u>	L			\coprod
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Lionville Laboratory, Inc.

PCBs by GC

Report Date: 06/15/05 10:45

RFW Batch Ni	umber: 0506L713	<u>Client:</u>	TNU-	HANFORD B	<u>05-01</u>	<u> </u>	<u>ork O</u>	<u>rder: 113</u>	<u>4360</u>	06001 Page	<u>: </u>		
	Cust ID:	J03CJ	9	J03CH	3	J03CH	3	J03CH	3	PBLKMY		PBLKMY BS	
Sample	RFW#:	00	7	013	3	013 M	s	013 MSI	D	05LE0490-1	Œ 1	05LE0490-1	MB1
Information	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.	00	1.0	00	1.0	00	1.0	00	1.0	00	1.0	00
	Units:	UG/	KG	UG/i	K G	UG/I	KG	UG/I	KG	UG/I	(G	UG/I	KG
Surrogate:	Tetrachloro-m-xylene	81	*	102	*	92	*	98	ક	90	*	90	ક
•	Decachlorobiphenyl	115	*	117	¥	112	¥	120	¥	108	¥	111	왐
	· · =		-=fl=		=fl==	<u> </u>	-=fl=:		==fl	=========	=f1	*=========	==f
Aroclor-1016	5	13	U	14	U	112	ક	125	¥	13	U	110	ቴ
Aroclor-1221	<u> </u>	13	บ	14	U	14	Ü	14	U	13	ช	13	U
Aroclor-1232		13	Ū	14	U	14	U	14	U	13	บ	13	U
Aroclor-1242		13	U	14	บ	14	U	14	U	13	U	13	U
Aroclor-1248		13	U	14	U	14	U	14	U	13	U	13	U
Aroclor-1254		13	ט	14	Ü	14	U	14	Ū	13	Ū	13	Ū
Aroclor-1260		13	บ	14	ט	119	*	132	ł	13	Ū	118	8

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

RFW Batch Number: 0506L713

Report Date: 06/17/05 13:40

Cust ID:	J03CJ3	J03CJ4	J03CJ5	J03CJ6	J03CJ7	J03CJ8
Sample RFW#:	001	002	003	004	005	006
Information Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Decachlorobiphenyl	94 %	81 🕏	85 %	89 %	86 %	99 %
Tetrachloro-m-xylene	76 %	95 😵	73 · %	76 %	75 %	84 %
K = 114	fl	fl	fl	=====fl==	flor	======f1
Alpha-BHC	1.7 U	1.7 U	1.7 U	1.7 ປ	1.7 U	1.7 U
Beta-BHC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 ປັ
Delta-BHC	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Delta-BHC (Lindane)	1.7 ប	1.7 U	1.7 U	1.7 U	1.7 ປ	1.7 U
Heptachlor	1.7 U	1.7 U	1.7 U	1.7 U	1.7 ປ	1.7 U
Aldrin	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Heptachlor epoxide	1.7 U	1.7 U	1.7. U	1.7 U	1.7 U	1.7 U
Endosulfan I	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	8.2
Dieldrin	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Dieldrin	64	150	140	220	540	640
Endrin	3.3 U	3.3 U	3.4 U	3.3 U	3.3 U	3.3 U
Endosulfan II	3.3 U	3.3 U	3.4 U	3.3 ບ	3.3 U	3.3 U
4,4'-DDD	2.6 2 5	5.9 T	1.9 % 5	6.3 🛣	12 🎵	13 ქ
Endosulfan sulfate	3.3 T	3.3 Ū	3.4 Ü	3.3 U	3.3 U	3.3 U
4,4'-DDT	25	70	23	110	170	210
Methoxychlor_	17 ט	17 U	17 U	- 17 ປ	17 บ	17 U
Endrin ketone	3.3 U	3.3 U	3.4 U	3.3 U	3.3 U	3.3 U
Endrin aldehyde	3.3 U	3.3 U	3.4 U	3.3 U	4.5	3.3 U
alpha-Chlordane	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
gamma-Chlordane	1.7 ປ	1.7 ປັ	1.7 U	1.7 U	1.7 U	1.7 U
Toxaphene	ע 170 ע 🕽	170 U T	170 U J	170 U T	170 U T	170 U J

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Report Date: 06/17/05 13:40

Lionville Laboratory, Inc.

RFW Batch Number: 0506L713

Pesticide/PCBs by GC, CLP List Report Date: 00 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 2

	Cust ID:	J03CJ	9	J03CH	3	J03CH	•	J03CJ)	J03CJ	l.	J03CJ	2
Sample	RFW#:	00.	7	008	3.	009)	010)	01:	i	01	2
Information	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.0	00	1.0	00	1.0	0	1.0	0	1.0	00	1.	00
	Units:	UG/1	KG	UG/I	(G	UG/F	(G	UG/F	KG .	UG/I	(G	UG/	KG
Surrogate:	Decachlorobiphenyl	93	+	88	*	92	*	102	*	95	*	94	*
Те	trachloro-m-xylene	68	* ==fl===	70	%	71	% :=fl==:	83	* :=fl==:	78	* -=fl==:	78	%
		1.7	∵ =: U	1.7	:=I1=== U	1.7	.=[1 = ==	1.7	. T. T. = =:	1.7	n L	1.7	
		1.7	Ū	1.7	U	1.7	U	1.7	U	1.7	U	1.7	Ū
		1.7	. ט	1.7	Ū	1.7	บ	1.7	U	1.7	U	1.7	ប
gamma-BHC (Lind	ane)	1.7	U	1.7	ט	1.7	U	1.7	U	1.7	U ·	1.7	
		1.7	U	1.7	บ	1.7	U	1.7	บ	1.7	U	1.7	บ
Aldrin	<u></u>	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	บ
Heptachlor epox	ide	1.7	U	1.7	U .	1.7	U	1.7	Ū	1.7	U	1.7	U
Endosulfan I		1.7	ប	1.7	υ.	1.7	U	1.7	U	1.7	Ū	1.7	ט
Dieldrin		1.7	ប	1.7	U	1.7	U	1.7	U	1.7	U		
4,4'-DDE		3.3	U	460		150		26		310		51	
Endrin		3.3	U	3.4	ט	3.3	U	3.3	U	3.4	U	3.4	บ
Endosulfan II		3.3	บ	3.4	Ū	3.3	ט	3.3	U	3.4	Ū	3.4	U
4,4'-DDD		3.3	U	69	I	7.8	7	3.3	U	8.1	5	1.9	11
Endosulfan sulf	ate	3.3	U	3.4	Ū	3.3	U	3.3	U	3.4	Ū	3.4	70
4,4'-DDT		3.3	U	420		92		9.1		110		24	
Methoxychlor		17	U	17	U	17	U	17	ប	17	U	17	U
Endrin ketone	<u></u>	3.3	U	3.4	U	3.3	U	3.3	U	3.4	Ū	3.4	_
Endrin aldehyde	<u> </u>	3.3	U	2.3	J	3.3	U	3.3	U	2.4	J ·	3.4	Ü
alpha-Chlordane		1.7	U	1.7	U	1.7	บ	1.7	U	1.7	U	1.7	Ü
gamma-Chlordane		1.7	U	1.7	U	1.7	U	1.7	Ū	1.7	Ū	1.7	Ü
Toxaphene		170	υ ፓ	170	υŢ	170	U J	170	v 5	170	υ 5	170	บ ั

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC



1.8 U

1.8 U

3.5 U

3.5 U

9.5

3.5 U

18 U

3.5 U

3.5 U

1.8 U

1.8 U

180 U 🏅

140

190

Lionville Laboratory, Inc.

RFW Batch Number: 0506L713

Heptachlor epoxide

Endosulfan I_____

Dieldrin _____

4,4'-DDE

Endosulfan II____

Methoxychlor ____

Endrin aldehyde_____

alpha-Chlordane__

gamma-Chlordane____

4,4'-DDD

Endosulfan sulfate

Endrin

4,4'-DDT

Endrin ketone

Toxaphene

Report Date: 06/17/05 13:40 Pesticide/PCBs by GC, CLP List Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 3

J03CH4 J03CH5 J03CH6 J03CH3 J03CH3 J03CH3 Cust ID: 015 016 014 013 013 MS 013 MSD RFW#: Sample SOIL SOIL SOIL SOIL SOIL SOIL Matrix: Information 1.00 1.00 1.00 1.00 1.00 1.00 D.F.: UG/KG UG/KG UG/KG UG/KG UG/KG Units: UG/KG 93 ¥ 92 * 94 * 91 * 101 ł ł Decachlorobiphenyl 101 Surrogate: 79 ł 78 ¥ 83 1 80 ¥ 75 1 83 1 Tetrachloro-m-xvlene =====f1=======f1=========f1 1.7 U 1.8 U 1.7 U 100 ł ł 1.7 U 91 Alpha-BHC 1.7 U 1.7 U 1.8 U ٠ Beta-BHC 1.7 U 90 1 96 1.7 U 1.8 U 1.7 U 102 8 109 1.7 U Delta-BHC 1.8 U 101 1.7 U 1.7 U 92 ł 1.7 U gamma-BHC (Lindane) 1.7 U 1.8 U 1.7 U 1.7 U 93 1 101 Heptachlor_____ 1.8 U 1.7 U 1.7 U 103 1.7 U 93 Aldrin 1.8 U

94

102

106

105

98

115

96

82

158

97

94

95

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8

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1

101

105

109

113

111

105

103

90

159

103

102

102

99

170 U

122 * *

ł

ł

1.7 U

1.7 U

1.7 U

3.4 U

3.4 U

3.4 U

3.4 U

3.4 U

3.4 U

17 U

3.4 U

3.4 U

1.7 U

1.7 U

170 U 🍒

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

170 U

101.105

1.7 U

1.7 U

1.7 U

3.4 U

3.4 U

7.4 J

3.4 U

17 U

3.4 U

3.4 U

1.7 U

1.7 U

-170 U 🏋

82

150



1.7 U

1.7 U

1.7 U

3.3 U

3.3 U

3.3 0

17 U

3.3 U

3.3 U

1.7 U

U

บวั

1.7

170

27

2.7 7 5

78

Lionville Laboratory, Inc. Pesticide/PCBs by GC, CLP List

Report Date: 06/17/05 13:40

Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 4 RFW Batch Number: 0506L713

		Cust ID:	J03CH7	,	PBLKMY		PBLKMY BS		
	Sample	RFW#:	017	,	05LE0490-1	Œ1	05LE0490-N	œ1	
	Information	Matrix:	SOIL		SOIL		SOIL		
		D. F. :	1.0	Ó	1.0	00	1.0	0	
		Units:	UG/F	(G	UG/1	KG.	UG/K	CG	
	Surrogate:	Decachlorobiphenyl	93	*	85	*	89	. 8	
	_	Tetrachloro-m-xylene	76	ŧ	76	¥	77	ક	
				=fl		-f1		=fl==	.=======fl=======fl====================
	Alpha-BHC		1.8	บ	1.7	U	93	*	
	Beta-BHC		1.8	U	1.7	U	88	*	
	Delta-BHC		1.8	U	1.7	υ	100	*	
	gamma-BHC (L	indane)	1.8	U	1.7	U	93	*	
			1.8	U	1.7	U	92	ł	
	Aldrin		1.8	U	1.7	U	95	ŧ	•
	Heptachlor e	poxide	1.8	U-	1.7	U	96	*	
			36		1.7	Ū	96	¥	
			1.8	U	1.7	U	99	ŧ	-
			1300		3.3	บ	107	*	
\supset	Endrin		3.5	U	3.3	ับ	100	*	
\supset	Endosulfan I	I	3.5	U	3.3	Ū	96	8	
)	4,4'-DDD		150	1	3.3	U	108	*	
0	Endosulfan sı	ulfate	3.5		3.3	U	95	*	
C			1700		3.3	U	100	*	
			18	U	17	U	133	¥	
	Endrin keton	e · ·	3.5	U	3.3	U	94	*	
	Endrin aldehy	yde	3.5	U	3.3	U	90	*	·
	alpha-Chlord	ane	1.8	Ü	1.7	U	95	*	
	gamma-Chlorda	ane	1.8	U	1.7	U	96	*	•
			180	U !	5 170	U	170	บ	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

N 10/1/05

Lionville Laboratory, Inc.

Herbicides, Special List

Report Date: 06/17/05 12:39 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: 1 RFW Batch Number: 0506L713

	Cust ID:	J03CJ	9	J03CH	3	J03 CH	3	J03CH	3	PBLKNA		PBLKNA BS	;
Sample Information	RFW#: Matrix: D.F.: Units:	00' SOIL 1.(ug/)	00	01: SOIL 1.0 ug/	00	013 M SOIL 1. ug/	00	013 MS SOIL 1. ug/	00	05LE0499-1 SOIL 1.0 ug/k	00	05LE0499- SOIL 1. ug/	00
Surrogate:	DCAA	110	*	41	*	48	*	48	*	130	*	119	*
Dalapon		170	£l U	170	-=f1== ປ	4 5	==fl=: %	44	fl %	170	:=11 U	103	:==!↓ %
Dicamba		67	Ü	68	Ū	39	*	39	*	67	Ü	115	ę.
Dichloroprop	······································	170	Ū	170	Ū	55	*	49	8	170	Ü	119	ž
2,4-D		33	U	34	U	33	*	32	*	33	U	117	· ·
2,4,5-TP (Silvex)		17	U	17	U	60	*	64	¥	17	U	127	¥
2,4,5-T		17	ָ ט	17	U	34	*	34	ł	17	U	127	ક
2,4-DB		170	U	170	U	45	ક	50	ŧ	170	U	136	¥
Dinoseb		17	ט	17	U	89	*	79	*	17	U	134	¥

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

的复数形式性数据的 的复数形式 电影人名

Client: TNU-HANFORD B05-018

LVL#: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00 Date Received: 06-09-2005

PCB

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted on 06-12-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-15-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- 3. The samples and their associated QC samples received Silica Gel, Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3630C, 3660A and 3665A respectively.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. All surrogate recoveries were within acceptance criteria.
- 6. The blank spike recoveries were within acceptance criteria.
- 7. All matrix spike recoveries were within acceptance criteria.
- 8. The initial calibrations associated with this data set were within acceptance criteria.
- 9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.
- 11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

Date Date

som\r:\group\data\pest\tau hanford\0506-713.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 1 pages. 00000002



Case Narrative

Client: TNU-HANFORD B05-018

LVL#: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00 Date Received: 06-09-2005

CHLORINATED PESTICIDES

Seventeen (17) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted on 06-12-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-14,15-2005. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- 3. Samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. All surrogate recoveries were within acceptance criteria.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. One (1) of forty (40) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 8. The initial calibrations associated with this data set were within acceptance criteria.
- 9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laborator√ Manager

Lionville Laboratory Incorporated

som\r:\group\data\pest\tnu hanford\0506-713.pes

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 5 pages.

000022

FIGURATION S	ample Discrepancy Report (SDR#_	058CZ61
Initiator: m. m. Anally Date: 6/17/or Client: The Hanfold	Batch: 0506 L 7/3 Samples: -0/3 m/0 Method: www.cupi		608 H
1. Reason for SDR			
a. COC Discrepancy Tech Profile		pler Error on C-O-C	-
b. General Discrepancy Missing Sample/ExtractCon Hold Time Exceededins	on Error Wrong Test Code Other Intainer Broken Wrong Same Ufficient Sample Preservation Amenable to Analysis	ole PulledLabel II	o's Hegible ed Past Hold
Note: Verified by [Log-In] or [Prep Group] (circl	e)\$ignature/date:		
c. Problem (Include all relevant specific			•
- mso recovery for DDD wo	nigh @12290 (perge 100-120).		
- ms, ns were ok			
-no hits for all in surple	v -013		_
2. Known or Probable Causes(s)	•		
•		•	·
•			
3. Discussion and Proposed Action	Other Description:		
Re-log			
Entire Batch Following Samples:	Larrote		•
Re-leach			
Re-extract			
Re-digest Revise EDD		•	
Change Test Code 10			
Place On/Take Off Hold (circle)	- \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
4. Project Manager Instructionssignatus	re/date:)(
 ✓ Concur with Proposed Action Disagree with Proposed Action; See 	\sim 01/ \sim 1/ \sim)	
Include in Case Narrative			•
Client Contacted:			[
Date/PersonAdd		•	
Cancel	<i></i>		:
5. Final Actionsignsture/date:	Other Explanation	on:	
Verified re-{logifieach][extract][digest]	(analysis) (circlé)	····	
/Included in Case Narranye			
Hard Copy COC Revised Electronic COC Revised			
_ EDD Corrections Completed			,
When Final Action has been recorded, f	orward original to QA Specialist for di	stribution and filing.	
Route Distribution of Completed SDR	Route Distribution	of Completed SDR	
X Initiator	Metals: E	Beegle	
X Lab General Manager, M. Tayk	or Inorganic slett GC/LC: I		
 X Project Mgr. Stone Johnson/Has X Technical Mgr. Wesson/Daniels 	MS: Rvd	nger nlak/Layman	
X QA (file): Alberts	Log-in: N	lelnic	,
Data Management Feldman	Admin: S	oos	
Sample Prep: Beegle/Kiger	$\underline{}$ Other: _	 _	
	E 64 18 44 1 2 - T	i contract of the contract of	



Case Narrative

Client: TNU-HANFORD B05-018

LVL#: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00 Date Received: 06-09-2005

HERBICIDE

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted on 06-14-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 06-17-2005. The extraction and analysis procedures were based on method 8151A.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- 3. The method blank was below the reporting limits for all target compounds.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. All blank spike recoveries were within acceptance criteria.
- 6. All matrix spike recoveries were within acceptance criteria.
- 7. The initial calibrations associated with this data set were within acceptance criteria.
- 8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain/Daniels

Laboratory Manager

Lionville Laboratory Incorporated

som/r:\group\data\herb\tnu\0506-713 doc

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208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

BRR888882

05061713

	Bechtel Hanford Inc.				CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						ST	1	B05-0	18-001	Page 3	- માં <u>ન</u>	
	Collector Doug Bowers			C	omin	inv Contact g Bowers	Telephor 531-0	ne No.			Project Coo KESSNER,	rdinator	Price C	ode			
	Project Designation	ı If Residual Pesticide Sar	upling - So		Sampling Location Horse Shoe Landfill			SAF No. B05-018		Air Qu	uality		7.	day			
	Ice Chest No.	C03106	•	F	Field Logbook No. COA EL 1173-5 R602702000			Method of S Fed Ex	hioment	· ·				day be			
	Shinned To	VICES LIONVILLE)	C	Offsite	Property No.	050	238			Bill of Ladi	ng/Air Bif	ا No. کے ا	652	مرده		
	POSSIBLE SAMI	LE HAZARDS/REMA	KRKS				İ		1	i	. 1	1.		1			1
	MA	MA				Preservation	None	Coel 4C	Cool 4C	Cool 4) Cool	_				ļ <u>-</u>
						Type of Container	≱G	3 G	#0	1							ļ
	Special Handling and/or Storage NA				No. of Container(s)	1	1	1			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \						
					Volume	2.50mL	250mL	250miL	500m	L 120mL							
		SAMP	LE ANAL	.YSIS		ne.	See item (1) in Special Instructions.	VOA - 8260A (TCL)	Semi-VOA - B270A (TCL)	Chlori Herbicid EPAB151 Dichloropl yacetic a	12.4- 12.4- venox	PCBs -	8082				
	Sample N	o. Matri	x •	Sample I	Date	Sample Time	乔州 安徽	e idi 4		動物	A Septic		ers rest		an de	My sattle	
O	J03CJ3	SOII		6-7-	05	0919					\mathbf{x}					T 10	
Q.	J03CJ4	SOII	L	T		0822					X					16	
	J03CJ5	SOII	L			0824					X					13	
00025	J03CJ6	SOII	L			0827					χ					t)	
٦	J03CJ7	SOIL	L	1		0830					X					14	
	CHAIN OF PO					Names		SPEC	IAL INSTR	UCTIO	NS						Matrix *
	Relinquished By/Removed From Date/Time Received By/Stor				y/Store	7728 6-2-05 d in Dal CESPSCL 62 d in Dal	le/Time	Chron Zinc		Copper. Le	846) (Antimony ad, Manganese.					um.	S=Soil SE=Sediment SO=Solid SI=Sludge W=Water O=Oil A=Atr DS=Drum Solids DS=Drum Solids DS=Drum I.kguids
	Reiniquished By/Removed From Date/Time Received By/Sto				<u>-2-</u>	6-9-05 11	te/Time 300 te:Time	Rel	sonnel not av inquish sam #ZCon	ules from	3728						TeTissne WieWipe L=Lupild V=Vepetation N=Other
	Relinquished By/Removed From Date/Time Received By/St			y/Store	d in . Da	te Time											
	LABORATORY SECTION	Received By					Titl	e							Da	te/Time	
	FINAL SAMPLE DISPOSITION	Disposal Method							Dispo	sed By					D	ate/Time	

Bechtel Hanfo	Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST B05-018-						5-018-001	Page 4	ot 4		
Collector Doug Bowers			any Contact ig Bowers	Telepho 531-0				Project Coordinator KESSNER, JH Price Code		Price Code	e Code Data Turi		ยา นสากม าส
Project Designation Horseshoe Landfill Residual	Pesticide Sampling - Sc		ing Location se Shoe Landfill					SAF No. B05-018		Air Quality		7 a	124
Ice Chest No.	3 106		Dogbook No. 1173-5		CQA R6027020	00	 	Method of Shir Fed Ex	oment				
Shinned To EBERLINE SERVICES (LIC POSSIBLE SAMPLE HAZA		Offsit	Property No.	250 :	238 		[Biff of Lading	/Air Bill 	^{No.} Se⁄2	505/2 	<u>د</u> ا	`}
NA	•		Preservation	None	Cool 4C	Cool 4C	Cool 4	E D	Cool 46	c	ļ		ļ
Special Handling and/or S	itorage		Type of Container	 - -	1		-	1			<u> </u>		
Nn			No. of Container(s) Volume	250mL	250mL	250mL	500m	L 120mL	250mi	L			
	SAMPLE ANAL	vsis	·	See item (1) in Special Instructions.	VOA - \$260A (TCL)	Semi-VOA - B270A (TCL)	Chlori Herbicid EPABISI Dicklorop yacetic s	es - \$0\$1 (2,4- henox	PCBs - \$	082			
Sample No.	Matrix *	Sample Date	Sample Time		44.50				Same.		4 50 G	i keris	A section
J03CJ8	SOIL	6-7-0	0131					X				#15	
J03CJ9	SOIL	6-7-05	0710	X	<u> </u>	K	_χ	<u> </u>	2			Full.	a rote
CHAIN OF POSSESSION		Sign/Print	Names	<u> </u>	SPEC	IAL INSTR	L	NS .	<u>!</u>		L _.		Matrix *
Relinquished By/Removed From Relinquished By/Removed From REFZC 37 Z8 GRelinquished By/Removed From Relinquished By/Removed From	Date/Time **F 0 5 /030 Date/Time	Received By/Stone Received By/Stone SUFFICE Received By/Stone	d in Da C 3 7 8 6 - 7 Da C 4 d in Da C 4 - 8 Da C 4 - 8 Da C 4 - 8 Da C 4 - 8 Da C 4 - 8 Da C 4 Da C 5 Da C 5 Da C 5 Da C 5 Da C 5 Da C 6 Da C	te/Time of //// te/Time o 5 /03 te/Time te/Time	(1) 10 Chrost Zinc;	P Metals - 60	10A (SW- Copper, Li 7I - (CV) ot availab moles fre	846) [Antimony, Arad. Manganese, M lead. Manganese, M le to					S=Soil SE=Sediment SO=Soild SI=Shadge W=Water O=OH A=Ab DS=Denon Soil DI,=Denon Soil T=Tissue W=Wipe L=Uspred L=Uspred L=Uspred N=Other
LABORATORY Received By		_1,	 	Titl	<u>_</u>						Di	ate/Time	<u> </u>
SECTION FINAL SAMPLE Dispusal Met DISPOSITION	thod		<u>.</u>			Dispo	sed Dy				D	ate/Time	

	Bechtel Hanford Inc.			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						r	B05-018-001		Page 2	ol Ŧ
	Collector Dong Bowers		Co	ompany Contact Doug Bowers	Telepho 531-0	one No.		F	Project Coord CESSNER, JH		Price Code	e Data Turnaroup		rnaround
	Project Designation Horseshoe Landfill Residua	Pesticide Sampling - So	1	mpling Location Horse Shoe Landfill		·			AF No. 305-018		Air Quality	, 	7 d .	y 8
	Ice Chest No. ERC 03 105			Field Logbook No. EL 1173-5 COA R602702000 Method of Shipment Fed Ex					óment ———				Y	
	Shipped To EBERLINE SERVICES LIONVILLE POSSIBLE SAMPLE HAZARDS/REMARKS			Tsite Property No.	A050	238	1	}	Bill of Lading	/Air Bill i	^{No.} ५५७८ ∐	-05PC	· ·	1
		AR <i>DS/REDI</i> ARRS		. Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Coal 40	-			
	N Δ Special Handling and/or	Storaga		Type of Containe	r ≱G	аG	aG	∎G	aG	•C	<u></u> .	<u></u>		
	MA	Storage		No. of Container(5)	,		1	1	'				<u> </u>
				Volume	250mL	250mL	250mL	500mL	l 20mL	250ml				
			See item (1) in Special Instructions.	VOA - \$260A (TCL)	Semi-VOA - 8270A (TCL)	Chloro- Herbicides - EPA\$151 (2, Dichlorophen yacetic acid	.4- 0x	PCB ₅ - 80	382					
	Sample No.	Matrix *	Sample Da	ate Sample Time			407	VC 14	in ved				alke is	1600
⊆ 8	J03CH8	SOIL	6-7-0	5 0804					χ				Ħ٢	19 % 19 %
00027 12000	J03CH9	SOIL		0807					x				6	
	J03CJ0.	SOIL		0811		<u> </u>	ļ. <u>.</u> .		X				7	100
3/	J03CJ1	SOIL		08/3					X				_1	
11	J03CJ2	SOIL		0816	<u></u>	<u> </u>			<u> </u>	<u> </u>		<u> </u>	1	13
	CHAIN OF POSSESSIO Relinquished By/Removed From Relinquished By/Removed From REF 26 372 6 Refinquished By/Removed From SJONE SINGLE 6	Date/Time Date/Time Date/Time Date/Time Date/Time	Received By/S Received By/S SIGNUE Received By/S FOR D	2C 37286. Stored In MACL 6805 Stored In EX	Date/Time 1030 Date/Time	(1) 10 Chror	CIAL INSTR CP Metals - 60) nium, Cobalt. C : Mercury - 747	OA (SW-84) Opper, Lead	6) (Antimony, A	rsenic, Bar olybdenum	ium, Beryllium, Be , Nickel, Selenium	oron, Cadımıan. . Silver, Vanadi	um.	Matrix * S=Soil SE=Sediment SO=Solid SI=Sludge IV = Water O=OH A=Air DS=Drum Solids DL=Orum Liquidg
	Refinquished By Removed From Date/Time Received		Received By/S	By/Stord In Date/Time Personnel relinquis			Personnel not available to relinquish samples from 3728 Ref # 20 on 6/8/05						T=Tissue Wi=Wipe L=Liquid \ =Vepetatles X=Other	
	LABORATORY Received By			****	Tit	le l						Da	te/Time	
ļ	SECTION				·			10					_ <u>_</u>	<u> </u>
	FINAL SAMPLE Disposal Me DISPOSITION	CHOL	-				Dispos	sed By				Da	ne/Time	-

Bechtel Hanford Inc.			CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST B05-018-001 Page 1 of								of 4			
Collector Doug Bowers		Comp	any Contact ig Bowers	Telepho 531-0	ne No.			Project Coo KESSNER.	rdinator	Price C	Code		Data Tu	rnaround
Project Designation Horseshoe Landfill P	Residual Pesticide Sampling - S		Sampling Location SAF No. Horse Shoe Landfill B05-018						Air Q	uality :		7 da	<u>/</u>	
Ice Chest No.	C 03106		Field Loebook No. COA Method of Shipment Fed Ex									· .		
Shipped To EBERLINE SERVICE	CES (LIONVILLE)	Offsit	Offsite Property No. A050138 Bill of Lading/Air Bill No. Se						ਂ ਦੋਣਾਂ	عم ده		· j · .		
POSSIBLE SAMPLI	E HAZARDS/REMARKS	•	1			مندا	1	_		_		,	•	}
			Preservation	None	Cool 4C	Cool 400	Cool 4	<u> </u>	D	<u> </u>				<u>}</u>
Special Handling a	nd/or Storage		Type of Container	aG	aG	aG	aG	∎G I	aG					ļ
			No. of Container(s)	250mL	250mL	250mL	500m		250m	1.				
			Volume			<u></u>			<u> </u>					· · · · · · · · · · · · · · · · · · ·
				Ser item (1) in Special Instructions.	VOA - \$260A (TCL)	Semi-VOA - 8270A (TCL)	Chlore Herbicid EPA8151	rs - 806 1 {2,4-	PCBs - I	5082		İ		
	- SAMPLE ANA	LYSIS			· ·		DicMoropi yacetic a			1		-]		
Sample No.	Matrix *	Sample Date	Sample Time									7	ting 4	
J03CH3	SOIL	6-7-04	074/	X	_ <i>k</i> _	k	Ł	1 1	12				stocke;	10
J03CH4	SOIL		0752					X					#/	
J03CH5	SOIL		0755	<u> </u>				X					1	
J03CH6	SOIL `		0759					k	<u>L</u>		l		1	
J03CH7	SOIL		0801					8				Ţ	4	
CHAIN OF POSS		Sign/Print			SPEC	IAL INSTR	UCTIO	NS						Matrix *
Relinquished By/Removed F REF-ZC 372 Relinquished By/Remoyed F	rom Date/Time -8 6805 (030 rogn Date/Time	Received By/Stor	2 3739 6-707 Ed In Da Open C 80	ne/Time	Chron Zinc):		opper Le	846) (Antimony ad, Manganese,					un,	S=Soll SE=Sedintent SO=Solid SI=Studge W = Water O=Ott
SUGALES/OVO Relinguistico By/Rennered F	roin Date/Time	Received By Nor	ed in \$6.405 Da	ste/Time	Pe	rean		·						DS=Drum Solid DL=Orum Liqui T=Tissue WI=tVipe L=Liquid V=Vcgctnion
telinquished By/Removed F	Tom Date/Time	Received By/Stor	ed In Da	Re Re	Personnel not available to Relinquish samples from 3728 Ref # Con 6/8/05								X=Other	
telinquished By/Removed F	rom Date/Time	Received By/Ston	ed In Da	ite/Time		on(al 81	25						
LABORATORY Received By Title SECTION					e ·	· · · · · ·						Dat	e/Time	
FINAL SAMPLE Dis	posal Method	· · · · · · · · · · · · · · · · · · ·				Dispo	sed Dy		····			Da	te/Time	

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	Α	В	c	D	Е	
PROJECT:	600-270		DATA PACKAG	E: H320	<u>د</u>	
VALIDATOR:	TII	LAB: LL	\mathcal{I}	DATE: 9/	26/05	
<u> </u>	<u></u>	<u>, </u>	SDG:	3206		
		ANALYSES	PERFORMED			
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)	81517		
SAMPLES/MAT	RIX					
J03CH3	J03CH4	JO3CHS	JUBCH4	JU3CH7		
203629	J03CH8	J03 CH9	otscot	Joseps		
203627	203074	703c75	JozeJC	703078		
703657	J03CJ				***************************************	
•					Soil	
Technical verifical	non accumentation	present?			105	٠٠٠.
						·
					· · · · · · · · · · · · · · · · · · ·	··- <u>-</u>
Initial calibrations Continuing calibra Standards traceab Standards expired	acceptable?ations acceptable? le?		LIBRATIONS (Lev		Yes Yes Yes	No No No No No No No No No No No No No N
DDT and endrin b	oreakdowns accepta	ble?				١ ١

3. BLANKS (Levels B, C, D, and E)			
Calibration blanks analyzed? (Levels D, E)	Yes	No(N/A
Calibration blank results acceptable? (Levels D, E)	Yes	No (N/A
Laboratory blanks analyzed?	Ver	No	N/A
Laboratory blank results acceptable?		No	N/A
Field/trip blanks analyzed? (Levels C, D, E)			
Field/trip blank results acceptable? (Levels C, D, E)	Yes	0	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No ((N/A)
Comments:			$\stackrel{\smile}{-}$
J03CJ9 - FB			
		-	
4. ACCURACY (Levels C, D, and E)			
Surrogates analyzed?			
Surrogate recoveries acceptable?	(Y)s	No	N/A
Surrogates traceable? (Levels D, E)			
Surrogates expired? (Levels D, E)	Yes	No	(N)A
MS/MSD samples analyzed?	Yes	No	N/A
MS/MSD results acceptable?	Yes	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	N/A
MS/MSD standards expired? (Levels D, E)			
LCS/BSS samples analyzed?	Yes	No	N/A
LCS/BSS results acceptable?	Yes	No	N/A
Standards traceable? (Levels D, E)	Yes	No	N/A
Standards expired? (Levels D, E)	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A
Performance audit sample(s) analyzed?		No	N/A
Performance audit sample results acceptable?	Yes	No	N/A
Performance audit sample results acceptable? Comments: MSD 4, 4 - DDD - 12:	190 Jall delu	<u>r</u>	
303c \$3			
4/-			
no toxable us fusD/LCS			

5. PRECISION (Levels C, D, 2	and E)				
Ouplicate RPD values acceptable?		***************************************	Yes	No	N/A
Duplicate results acceptable?	,	••••••	Y9s3	No	N/A
MS/MSD standards NIST traceable? (I	Levels D, E)		Yes	No/	NA
MS/MSD standards expired? (Levels I	D, E)	***************************************	Yeş	No(M
Field duplicate RPD values acceptable	??	•••••••••••	(Yes)	No	N/A
Field split RPD values acceptable?		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Yes	No(NA
Transcription/calculation errors? (Leve	els D, E)	***************************************	Yes	No	MA
Comments: No toxapo	Lu MS/MSD.	- Jag			
•	<u> </u>			· .	
·.					
6. SYSTEM PERFORMANC	E (Levels D and E)				<u> </u>
Chromatographic performance accepta	able?	************************************	Yes	No /	N/A
Positive results resolved acceptably?		••••••	Yes	No(N/A
Comments:		·			$\stackrel{\smile}{-}$
		· · · · · · · · · · · · · · · · · · ·			
					
			<u></u>		
		•	•		
7. HOLDING TIMES (all leve	els)				
Samples properly preserved?				No	N/A
Sample holding times acceptable?		***************************************	(Yes)	No	N/A
Comments:			$\overline{}$		
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETE	CTION LIMITS (all
levels)	
Compound identification acceptable? (Levels D, E)	
Compound quantitation acceptable? (Levels D, E)	
Results reported for all requested analyses?	Ye No N/A
Results supported in the raw data? (Levels D, E)	Yes No (N/A)
Samples properly prepared? (Levels D, E)	Yes No (N/A
Detection limits meet RDL?	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments: dichlorepropy 2,4-DB, toxaple	ne, meshovyelor
9. SAMPLE CLEANUP (Levels D and E)	
Fluoricil ® (or other absorbent) cleanup performed?	Yes No N/A
Lot check performed?	Yes No N/A
Check recoveries acceptable?	Yes No N/A
GPC cleanup performed?	Yes No N/A
GPC check performed?	Yes No N/A
GPC check recoveries acceptable?	Yes No N/A
GPC calibration performed?	Yes No N/A
GPC calibration check performed?	Yes No N/A
GPC calibration check retention times acceptable?	Yes No N/A
Check/calibration materials traceable?	Yes No N/A
Check/calibration materials Expired?	Yes No N/A
Analytical batch QC given similar cleanup?	Yes No N/A
Transcription/Calculation Errors?	1 /
Comments:	
	·

Date:

5 October 2005

To:

Bechtel Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

Horseshoe Landfill Residual Pesticide Sampling - Soil - Waste Site

600-270

Subject: Volatile - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

	Sample/15	Samole Garesy		Valleduon	. Misunod
•	J03CJ9	6/7/05	Soil	С	8260C
	J03CH3	6/7/05	Soil	С	8260C

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be analyzed within 14 days of the date of sample collection.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all methylene chloride results were qualified as undetected, raised to the RQL and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J03CJ9) was submitted for analysis. No analytes were detected in the field blank.

· Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria.

Eight analytes were reported above the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

Completeness

Data package No. H3206-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to method blank contamination, all methylene chloride results were qualified as undetected, raised to the RQL and flagged "U".

Eight were reported above the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- Indicates presumptive evidence of a compound at an estimated value.
 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

VOLATILE DATA QUALIFICATION SUMMARY*

'SDG: H3206	HREVIEWER:	Project: 600-270	PAGE L OF L
COMMENTS:			DE A COM
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene chloride	U at RQL	All	Method blank contamination

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFO	RD			7	
Laboratory: LLI				1	
Case:	SDG: H	3206			
Sample Number		J03CJ9		J03CH3	
Remarks				E. Blank	
Sample Date		6/7/05		6/7/05	
Analysis Date		06/13/05		06/13/05	
VOA	RQL	Result	Q	Result	Q
Chloromethane	10	12	U	10	Ü
Bromomethane	10	12	U	10	U
Vinyl Chloride	10	12	Ū	10	Ū
Chloroethane	10	12		10	Ū
Methylene Chloride	10	10	Ū	10	Ū
Acetone	10	12		10	_
Carbon Disulfide	10	6	Ŭ	5	Ū
1.1-Dichloroethene	10	6	Ū	5	Ū
1,1-Dichloroethane	10	6	Ū	5	Ū
1,2-Dichloroethene (total)	10	6	Ü	5	Ŭ
Chloroform	10	6	Ŭ	5	Ŭ
1,2-Dichloroethane	10	6	Ŭ	5	Ū
2-Butanone	10	12	Ū	10	U
1,1,1-Trichloroethane	10	6	Ü	5	U
Carbon Tetrachioride	10	6	Ū	5	Ü
Bromodichloromethane	10	6	U	5	Ü
1,2-Dichloropropane	10	6	Ū	5	Ū
cis-1,3-Dichloropropene	10	6	U	5	U
Trichloroethene	10	6	υ	5	U
Dibromochloromethane	10	6	υ	5	U
1,1,2-Trichloroethane	10	6	U	5	IJ
Вепzепе	10	6	U	5	IJ
trans-1,3-Dichloropropene	10	6	Ų	5	U
Bromoform	10	6	Ų	5	U
4-Methyl-2-pentanone	10	12	U	10	Ū
2-Hexanone	10	12	Ü	10	U
Tetrachloroethene	10	6	ט		Ū
1,1,2,2-Tetrachloroethane	10	6	U	5	U
Toluene	10	6	ΰ		Ŭ
Chlorobenzene	10	6	U		Ū
Ethylbenzene	10	6	U	5	Ū
Styrene	10	6	J		Ū
Xylene	10		U		Ü
cis-1,2-Dichloroethene	10	6	Ū		Ū
trans-1,2-Dichloroethene	10	6	Ŭ		Ŭ

Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 06/17/05 07:33

RFW Batch Number: 0506L713 Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001 Page: la

	Cust ID:	J03CJ	9	J03CH	3	J03CH	3	J03CH	3	VBLKVU		VBLKVU BS	
Sample Information	RFW#: Matrix: D.F.: Units:	00' SOIL 1.; ug/l	16	01: SOIL 0.96 ug/I	52	013 MS SOIL 1.0 ug/I	06	013 MSI SOIL 0.92 ug/I	26	05LVG182-1 SOIL 1.(ug/l	00	05LVG182-1 SOIL 1.0 ug/H	00
	Toluene-d8	104	*	105	*	97	*	96	*	97	*	95	*
Surrogate Bromof	luorobenzene	102	*	106	*	97	¥	94	¥	94	¥	98	¥
	oroethane-d4	109	ક	112	ક	111	*	111	ક	99	*	102	¥
		****	==fl===	=======		========	==fl=			==========	=fl	##========	==fl
		12	U,	10	U	. 11	U	9	U	10	U	10	Ü
Bromomethane		12	U	10	U	11	U	9	U	10	U	10	ប
Vinyl Chloride		12	U	10	U	11	U	9	U	10	บ	10	U
Chloroethane		12	Ū	10	ָ ט	11	U	. 9	U	10	U	10	U
Methylene Chloride		(8 8	(P	10 8	E U	12	В	11	В	3	J	3	BJ
Acetone		12	Ù	10	ัช	11	U	9	U	10	U	10	U
Carbon Disulfide		6	Ū	5	U	6	U	5	Ψ	5	U	5	Ū
1,1-Dichloroethene		6	ט	5	U	112	¥	111	*	5	Ü	101	¥
1,1-Dichloroethane	<u> </u>	6	U	5	U	6	U	5	U	- 5	Ū	5	U
1,2-Dichloroethene (to	otal)	6	U	5	U	6	U	5	Ū	. 5	U	5	U
Chloroform		6	Ŭ	5	U	6	U ·	- 5	U	5	ប	5	U
1,2-Dichloroethane		6	ប	5	Ū	6	U	5	U	5	บ	5	U
2-Butanone		12	ប	10	U	11	U	9	U	10	U	10	U
1,1,1-Trichloroethane		6	U	5	U	6	U	5	U	5	U	5	Ü
Carbon Tetrachloride	_ 	6	U	5	U	6	ប	5	Ü	5	U	5	Ū
Bromodichloromethane_		6	U	5	U	6	U	5	U	5	U	5	Ü
1,2-Dichloropropane		6	U	5	Ū	6	U	5	ប	5	Ū	5	Ü
cis-1,3-Dichloroproper	1e	6	U	5	Ŭ	6	U	5	ប	5	U	5	Ü
Trichloroethene		6	U	5	U	119	*	114	8	5	U	102	*
Dibromochloromethane_		6	U	5	υ.	6	Ū	5	U	5	U	5	Ü
1,1,2-Trichloroethane		6	U	5	U	6	U	5	U	5	U	5	ซ
Benzene		6	U	5	Ū	109	*	105	*	5	Ū	98	*
Trans-1,3-Dichloroprop	ene	6	Ū	5	.U	6	U	5	Ū	5	Ü	5	บ
Bromoform		6	U	5	ប	6	U	5	U	5	Ü	5	U
4-Methyl-2-pentanone_		12	U	10	U	11	Ū	9	Ū	10	Ū	10	U
2-Hexanone		12	Ü	10	U	11	Ū	9	Ü	10	IJ	10	บ
Tetrachloroethene		6	U	5	U	6	U	. 5	Ū	5	U	5	U
1,1,2,2-Tetrachloroeth	nane	6	U	5	U	6	U	5	Ü	5	Ü	. 5	Ū
Toluene		6	U	5	U	119	*	117	¥	5	Ü	104	ł.
*= Outside of EPA CLP	QC limits.					,	1	············	-	_	-		-

12/0/1/05

RFW Batch Number: 0506L	<u>713 Clie</u>	nt: TNU	<u>LANFOR</u>	<i>D</i> B05-018	<u> </u>	6 Work (<u>)rder</u>	<u>: 11343606</u>	<u> 001</u>	<u> Paqe: 11</u>	2		
	Cust ID:	J03CJ	9	J03СН3		J03CH3	3	J03CH3		VBLKVU		VBLKVU BS	I.
	rfw#:	007	7	013		013 MS	3	013 MSD		05LVG182-M	IB 1	05LVG182-	MB1
Chlorobenzene		6	U	5	U	117	*	114	¥	5	Ū	101	
Ethylbenzene		6	U	5	U	6	บ	5	Ū.	. 5	U	5	U
Styrene		6	U	5	U	6	ប	5	U	. 5	U	5	U
Xylene (total)		6	U	. 5	U	6	U	5	U	5	U	5	U
cis-1,2-dichloroethene		6	U	5	U	6	U	5	Ū	5	U	5	Ü
trans-1,2-dichloroethene		. 6	Ū	5	U	6	ប	5	U	5	U	5	U
*= Outside of EPA CLP Q	C limits.												

10/1/09

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD B05-018

LVL#: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00 Date Received: 06-09-2005

GC/MS VOLATILE

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 06-13-2005.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were analyzed within required holding time.
- 3. Non-target compounds were not detected in the samples.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. All matrix spike recoveries were within acceptance criteria.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.
- 8. Internal standard area and retention time criteria were met.
- 9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
- 10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 11. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Iain Daniels

Labotátory Manager

Lionville Laboratory Incorporated

som\group\data\voa\tnu-hanford\0506-713.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 4 pages.

7000014

Bechte	Hanford Inc.	CI	HAIN OF CUST	rody/s	SAMPL	E ANAL	YSIS	REQUEST		B05	5-018-001	Page 1	of <u>4</u>
Collector Doug Bowers		Compa	any Confact ng Bowers	Telepho 531-0	one No.			Proiect Coordi KESSNER, JH		Price Code		Data Tu	urnaround
Project Designation Horseshoe Landfil	l Il Residual Pesticide Sampling - Soi		ing Location se Shoe Landfill					SAF No. B05-018		Air Quality	, ·	7 d	ey
Ice Chest No.	ec 03 106		Logbook No. 1173-5		COA R602702			Method of Ship Fed Ex	ment			·	(·
Shipped To	VICES (LIONVILLE)	Offsite	Property No.	250	238			Bill of Lading/	Air Bill N	No. Set	5-05/20	<u>.</u>	-
POSSIBLE SAMP	LE HAZARDS/REMARKS			ł		1	ł			ł	1		1
NA	•		Preservation	None	Cool 4C	Cool 4C	Cool 4		Cool 4C	<u> </u>	 		
Special Handling	andlar Storage	ļ	Type of Container		<u> </u>					<u> </u>	 	· · ·	<u> </u>
'	, 2110,01 - 22-18-		No. of Container(s)	1.	} '	1	j .	l I	l . <u>.</u>				
NA			Volume	250mL	250mL	250mL	500m	L 120mL	250mL				
·	SAMPLE ANAL	YSIS		See item (1) in Special Enstructions.	(TCL)	A Semi-VOA - 8270A (TCL)	Chlore Herbicid EPA\$151 Dichloropi yacatic s	es - 8081 2,4- henox	PCBs - 80	62			
Sample No	o. Matrix *	Sample Date	Sample Time									.	
J03CJ8	SOIL	6-7-09	5 0931		1			X				#15	
J03CJ9	SOIL	6-7-05		X	X	X	7	X	7			Full	sudte
				<u> </u>	<u> </u>		- 1						
	<u></u>				<u></u>								
CHAIN OF PO		Sign/Print			SPE	CIAL INSTR	UCTIO	NS					Matrix *
Relinquished By/Remove REFZ C 37 Relinquished By/Remove S/MACT X/X Relinquished By/Remove	Z8 6 8 0 S /030 od From Date/Time	Received By/Store	C 3748 6-7. Pad In Da Baddin Da Red In Da Red In Da	ate/Time 05° 66 10 5 05 ate/Time ate/Time	Chro		opper, Li	846) (Antimony, Au ead, Manganese, Mo				am.	S=Soil SE=Scdimcui SO=Solid Si=Sandge W = Water O=Oil A=Air DS=Drum Soiida DL=Drum Liqunds T=Tissue Wi=Wape
Relinquished By/Remove	d From Date Time	Received By/Store	ed in Da	nte Time		Personnel not relinquish san Ref # 200 on	noles fro	om 3728					LeVeleturion
Relinquished By/Remove	d From Date/Time	Received By/Store	:d in Da	ste/Time	-				•				
LABORATORY SECTION	Received By			Tit	tle			· · · · · · · · · · · · · · · · · · ·			Dar	te/Time	
	Disposal Method					Dispos	sed By	·		<u> </u>	Da	ate/Time	

Bechtel Ha	inford Inc.		HAIN OF CUST	FODY/S	AMPLE	EANAL	YSIS	REQUEST	r	B0:	5-018-001	Page 1	of 4
Collector Doug Bowers		Сощра	any Contact og Bowers	Telepho 531-0	ne No.			Proiect Coordi KESSNER, JH		Price Code		Data Ti	urnaround
Project Designation Horseshoe Landfill Res	idual Pesticide Sampling - Soi		ling Location se Shoe Landfill					SAF No. B05-018		Air Quality	y (`` '	7 de	<u> </u>
Ice Chest No.	03106		Logbook No. 1173-5		COA R6027020			Method of Ship Fed Ex	ment		·		· .
Shinned To EBERLINE SERVICE		Offsite	e Property No. AC	7501	238			Bill of Lading	Air Bill l	No. ∋∂3	5 OS P	<u> </u>	
POSSIBLE SAMPLE I				T		1]]		T		T
	•	,	Preservation	None	Cool 4C	Cool 40g		<u> </u>	Cool 40	د	ļ		1
Special Handling and	Vor Storage		Type of Container	aG	aG	aG .	#G		aG		ļ		
			No. of Container(s)	<u> </u>	1	1	1	1	'		<u> </u>	<u> </u>	
			Volume	250mL	250mL	250mL	500m	L 120mL	250ml	1			
	SAMPLE ANALY	YSIS		See item (1) in Special Instructions.	VOA - \$260A (TCL)	Semi-VOA - 8270A (TCL)	Chlore Herbició EPARISI Dichloropi yacetic a	es - 8081 (2,4- henox	PCB4 - 20	982			
Sample No.	Matrix *	Sample Date	Sample Time		100000						W. 199		
J03CH3	SOIL	6-7-05	0741	λ	X	k	ł	X	X			stocke,	10
J03CH4	SOIL		0752					X				#1	
J03CH5	SOIL		0755					X				1	
J03CH6	SOIL		0759					k				3	
J03CH7	SOIL		0801					8				4	
CHAIN OF POSSE		Sign/Print	Names		SPEC	IAL INSTR	UCTIO	NS			<u> </u>		Matrix *
REF-2c 3729 Relinquished By/Removed From SOALES 1000 Relinguished By/Removed From Relinguished By/Removed By	2 Howers 6-7-05/16/m Date/Time 8 6805 1030 Date/Time	Received By/Store S J GALL Received By/Store	1718 6-705 Da 18 C S O S 20 In Da 20 In Da 20 In Da	nte/Time	Zinc)	nium, Cobalt, C Mercury - 747	Copper, Le VI - (CV)	846) (Antimony, A. ad, Manganese, Mo					S=Soil SE=Sedimen; SO=Solid Si=Studge W = Water O=Oil A=Ar DS=Drum Solids DL=Drum Liquids T=Tissue Wi=Wipe L=Liquid V=Yegatation X=Other
Relinquished By/Removed From	- <u></u>	Received By/Store	·	ate/Time	Res	linquish sam	ples from	n 3728 					х-оде
LABORATORY Received SECTION	ved By			Tit	le				_		D	ate/Time	
FINAL SAMPLE Dispo	sal Method					Dispos	sed By				D	Date/Time	

Data Validation Supporting Documentation

LEVEL:	Α	В		D	E	
PROJECT: 10	υ <u>(</u> 00-	270	DATA PACKAG	ie: #320	⁷ 6	
VALIDATOR:	TLT_	LAB: LL	Γ	DATE: 9/2	165	
			SDG:	43500,		
		ANALYSES	PERFORMED			
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 82 (TCLP)	270
SAMPLES/MAT	RIX					
Tot	3CJ9	303 CF	1 3			
· · · · · · · · · · · · · · · · · · ·	<u> </u>					
					———— -	
	ACKAGE COMP				Soil	
Technical verifica	tion documentation	LETENESS AND			5) N/
Technical verifica	tion documentation	LETENESS AND			5) N/
Technical verifica	tion documentation	LETENESS AND			5	g N/
Technical verifica	tion documentation	LETENESS AND o			5) N/
Technical verifica Comments: 2. INSTRU	tion documentation	LETENESS AND operations of the present?	ON (Levels D and	E)	Yes(N	o N/
Technical verifica Comments: 2. INSTRU GC/MS tuning/pe	tion documentation	LETENESS AND of present?	ON (Levels D and	E)	Yes N	
Technical verifica Comments: 2. INSTRU GC/MS tuning/pe Initial calibrations	MENT TUNING	AND CALIBRATI	ON (Levels D and	E)	Yes N	lo N/
2. INSTRU GC/MS tuning/pe Initial calibrations Continuing calibra	MENT TUNING a	AND CALIBRATI	ON (Levels D and	E)	Yes N	lo N/
2. INSTRU GC/MS tuning/pe Initial calibrations Continuing calibra Standards traceab	MENT TUNING A rformance check acceptable?	AND CALIBRATI	ON (Levels D and	E)	Yes NYes NYes NYes NYes N	io N/ io N/
2. INSTRUGC/MS tuning/pe Initial calibrations Continuing calibrations Standards traceab Standards expired	MENT TUNING A rformance check acceptable?	AND CALIBRATI	ON (Levels D and	E)	Yes NYes NYes NYes NYes NYes NYes N	lo N/. lo N/. lo N/.

3. BLANKS (Levels B, C, D, and E)			1	5
Calibration blanks analyzed? (Levels D, E)				Жy.
Calibration blank results acceptable? (Levels D, E)		2.1	•	
Laboratory blanks analyzed?				
Laboratory blank results acceptable?				
Field/trip blanks analyzed? (Levels C, D, E)				
Field/trip blank results acceptable? (Levels C, D, E)				
Transcription/calculation errors? (Levels P, E)		Yes	No	(N/A
Comments: Meshylore Chloricle - 0 as	RQL			
		· · · · · · · · · · · · · · · · · · ·		
	No	FR	,	
4. ACCURACY (Levels C, D, and E)			>	
Surrogates/system monitoring compounds analyzed?		(Xes/	No	N/A
Surrogate/system monitoring compound recoveries acceptable?		(Ye)	No	N/A
Surrogates traceable? (Levels D, E)		1 es	МБ	
Surrogates expired? (Levels D, E)	,	Yes	No	AND.
MS/MSD samples analyzed?		(Y)	No	N/A
MS/MSD results acceptable?		(_Y)es	No	M
MS/MSD standards NIST traceable? (Levels D, E)				
MS/MSD standards? (Levels D, E)		~ ~ ~	,	
LCS/BSS samples analyzed?		(. Yes	No	N/A
LCS/BSS results acceptable?				
Standards traceable? (Levels D, E)			•	\sim
Standards expired? (Levels D, E)				
Transcription/calculation errors? (Levels D, E)		Yes	No	(N/A
Performance audit sample(s) analyzed?		Yes	(N)	N/A
Performance audit sample results acceptable?		Yes	No	(N/A
Comments:		CAG	<u></u>	

5.	PRECISION (Levels C, D, and E)			
	SD samples analyzed?			
MS/MS	SD RPD values acceptable?	(Yes)	No	N/A
MS/MS	SD standards NIST traceable? (Levels D, E)	Yes	No '	(N/A)
MS/MS	SD standards expired? (Levels D, E)	Yes	No	(VA)
Field d	uplicate RPD values acceptable?	Yes	No	(V/A)
Field sp	plit RPD values acceptable?	Yes	No	(N/A)
Transci	ription/calculation errors? (Levels D, E)	Yes	No	(JAKA
Commo	ents:			
<u> </u>				
			-	
6.	SYSTEM PERFORMANCE (Levels D and E)			
	al standards analyzed?			
linte rn	al standard areas acceptable?	Yes	No	N/A
inte rna	al standard retention times acceptable?	Yes	No	N/A
Standa	ards traceable?	Yes	No	N/A
Standa	ards expired?	Yes	No	N/A
	cription/calculation errors?			
Comm	nents:			V
7.	HOLDING TIMES (all levels)		١.,	37/4
-	les properly preserved?	$I \setminus I$		N/A
	le holding times acceptable?	(Y)s	No	N/A
Comn	nents:			
			_	

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DI	ETECTION LIMITS (all
levels)	
Compound identification acceptable? (Levels D, E)	V
Compound quantitation acceptable? (Levels D, E)	
Results reported for all requested analyses?	
Results supported in the raw data? (Levels D, E)	Yes No N/A
Samples properly prepared? (Levels D, E)	Yes No (N/A
Laboratory properly identified and coded all TIC? (Levels D, E)	
Detection limits meet RDL?	Yes (No N/A
Transcription/calculation errors? (Levels D, E)	Yes No NA
Comments: & over	
	·
9. SAMPLE CLEANUP (Levels D and E)	\wedge
GPC cleanup performed?	Yes No N
GPC check performed?	
GPC check recoveries acceptable?	
GPC calibration performed?	, , , , , , , , , , , , , , , , , , ,
GPC calibration check performed?	
GPC calibration check retention times acceptable?	• • • • • • • • • • • • • • • • • • •
Check/calibration materials traceable?	
Check/calibration materials Expired?	· · · · · · · · · · · · · · · · · · ·
Analytical batch QC given similar cleanup?	
Transcription/Calculation Errors?	Yes No W/
Comments:	

Date:

5 October 2005

To:

Bechtel Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

Horseshoe Landfill Residual Pesticide Sampling - Soil - Waste Site

600-270

Subject: Semivolatile - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

e selfajalen puon	indstrijstelledddistr		a Vaildejtiáis	
J03CJ9	6/7/05	Soil	C	See note 1
J03CH3	6/7/05	_ Soil	С	See note 1

^{1 -} Semivolatiles by 8270C.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two

times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples were qualified as undetected, raised to the RQL and flagged "U".

Due to method blank contamination, the di-n-butylphthalate and diethylphthalate results in sample J03WCJ9 were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J03CJ9) was submitted for analysis. No analytes were detected in the field blank.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits.

If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike duplicate (13%) and LCS (8%) recoveries outside QC limits, all 2,4-dinotrophenol results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

· Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to an RPD outside QC limits (104%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Sixteen analytes exceeded the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

· Completeness

Data package No. H3206-LLI was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, the bis(2-ethylhexyl)phthalate result in all samples were qualified as undetected, raised to the RQL and flagged "U".
- Due to method blank contamination, the di-n-butylphthalate and diethylphthalate results in sample J03WCJ9 were raised to the RQL, qualified as undetected and flagged "U".
- Due to matrix spike duplicate (13%) and LCS (8%) recoveries outside QC limits, all 2,4-dinotrophenol results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits (104%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Sixteen analytes exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, Validation Statement of Work, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDC H3206 TA		Projection 600-2701	PAGE 18 OF 17
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Di-n-butylphthalate Diethylphthalate	U at RQL	J03CJ9	Method blank contamination
Bis(2-ethylhexyl)phthalate	U at RQL	All	Method blank contamination
2,4-Dinitrophenol	J	All	MSD, LCS and RPD

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTEL-HANFORD									
Laboratory: LLI	SDG:	H3206		l					
Sample Number	J03CJ9		J03CH3						
Remarks	E. Blank								
Sample Date		6/7/05		6/7/05				1	
Extraction Date		6/12/05		6/12/05					
Analysis Date		6/14/05		6/14/05				1	
Semivolatile (8270C)	RQL	Result	a	Result	Q_	Result]Q	Result	<u> Q</u>
Phenol	660	330		340					
bis(2-Chloroethyi)ether	660	330	U	340	U_		1_	1	
2-Chlorophenol	660	330	U	340	U	l			
1,3-Dichlorobenzene	660	330		340	U				
1,4-Dichlorobenzene	660	330		340	U				
1,2-Dichlorobenzene	660	330		340					
2-Methylphenol	660	330	Ū	340					
2,2'-oxybis(1-chloropropane)	660	330	U	340	U		1_		
3 and/or 4-Methylphenol	660	330	U	340	U		Т		
N-Nitroso-di-n-propylamine	660	330	U	340	υ				
Hexachloroethane	660	330	Ū	340	Ū		\top		
Nitrobenzene	660	330	U	340	U		Τ		
Isophorone	660	330	U	340	Ū		$oldsymbol{oldsymbol{oldsymbol{oldsymbol{\Box}}}$		\perp
2-Nitrophenol	660			340	Ū		L		
2,4-Dimethylphenol	660			340		<u> </u>	\perp		
bis(2-Chloroethoxy)methane	660			340					1_
2,4-Dichlorophenol	660			340	U	I			
1,2,4-Trichlorobenzene	660	1		340			1_		⊥_
Naphthalene	660			340					
4-Chloroaniline	660	330	U	340				᠋	
Hexachlorobutadiene	660			340	U				
4-Chloro-3-methylphenol	660	330	U	340	IJ			Ι	
2-Methylnaphthalene	660	330	U	340	υ				
Hexachlorocyclopentadiene	660	330	Ū	340	U		Т	J	
2,4,6-Trichlorophenol	660	330	U	340	U		\perp		
2,4,5-Trichlorophenol*	660	840	Ū	850	U				
2-Chloronaphthalene	660	330	Ū	340	U		1		
2-Nitroaniline*	660	+		850	บ	1	T		
Dimethylphthalate	660			340	Ū		I		
Acenaphthylene	660			340	U		I		
2.6-Dinitrotoluene	660			340		Ţ	T		

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Project: BECHTEL-HANFORD									
aboratory: LLI SDG: H3206				L					
Sample Number	sample Number			J03CH3					
Remarks		E. Blank							
Sample Date		6/7/05	6/7/05]	
Extraction Date		6/12/05		6/12/05					
Analysis Date		6/14/05		6/14/05				T	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	840	U_	850	Ü				\perp
Acenaphthene	660	330	U	340					\perp
2,4-Dinitrophenol*	660	840		850	IJ				
4-Nitrophenol*	660	840	Ū	850	U		\mathbf{L}		\perp
Dibenzofuran	660	330		340	U		\Box		
2,4-Dinitrotoluene	660			340					
Diethylphthalate	660	660		340					
4-Chlorophenyl-phenyl ether	660	330	U_	340					
Fluorene	660			340	υ]		1	
4-Nitroaniline*	660	840	U	850	U				<u> </u>
4,6-Dinitro-2-methylphenol*	660	840	<u>υ</u> _	850	υ				
N-Nitrosodiphenylamine	660	330	U_	340		I I		<u> </u>	
4-Bromophenyl-phenyl ether	660			340	U				
Hexachlorobenzene	660			340		I	L	Ι	
Pentachiorophenoi*	660	840	Ü	850	U_	l			
Phenanthrene	660	330	U_	340	U_			1	1
Anthracene	660	330	U_	340					
Carbazole	660	330	U	340		<u> </u>	上		
Di-n-butylphthalate	660	660		340					
Fluoranthene	660	330	Ū	340	U			<u> </u>	
Pyrene	660	330	U	340				1	
Butylbenzylphthalate	660			340		<u></u>		<u> </u>	
3,3'-Dichlorobenzidine	660	330	U	340	U				
Benzo(a)anthracene	660			340		I	1_	1	
Chrysene	660	330	U	340	U	<u> </u>	L.		
bis(2-Ethylhexyl)phthalate	660	660	U	660		1		<u></u>	
Di-n-octylphthalate	660	330	U	340					
Benzo(b)fluoranthene	660	330	U	340					
Benzo(k)fiuoranthene	660	330	Ū.	340					
Benzo(a)pyrene	660	330	U	340	U	J			
Indeno(1,2,3-cd)pyrene	660	330	U	340	U				
Dibenz(a,h)anthracene	660	330	U	340	U		L		
Benzo(g,h,l)perylene	660			340	U		Τ		I

RFW Batch Number: 0506L713

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Client: TNUHANFORD B05-018 H3206 Work Order: 11343606001

Report Date: 06/16/05 16:10

Page: la

	Cust ID:	J03CJ9	•	J03CH3		J03СН3		J03CH	3	SBLKLB	SBLKLB BS	S
Sample	ample RFW#:			013		013 MS		013 MSD		05LE0489-MB1	05LE0489-MB1	
Information	Matrix:	SOIL	SOIL		SOIL		SOIL			SOIL	SOII	L
	D.F.:	1.0		1.00		1.00		1.0	00	1.00	1.	.00
	Units:	ug/K	g	ug/l	g	ug/I	Kg	ug/I	Κg	ug/Kg	ug/	/Kg
	Nitrobenzene-d5	61	*	50	*	81	*	81	8	62 %	86	8
Surrogate	2-Fluorobiphenyl	63	*	50	*	88	*	86	¥	70 %	88	ક્ષ
Recovery	Terphenyl-d14	7 7	*	64	ક્ષ	96	ક્ષ	94	*	77 %	96	ક
	Phenol-d5	71	¥	55	*	90	*	81	ક	72 %	89	ક્ર
	2-Fluorophenol	58	¥	45	ક	75	*	72	*	59 %	81	ક
	2,4,6-Tribromophenol	71	8	49	*	119	8	118	*	78 %		ક
Phenol	· · · · · · · · · · · · · · · · · · ·	330	:=11== U	340	=fl== U	**************************************	==fl=: %	======= 84	==fl *	i=======±==±==±==± 330	1======================================	===f *
bis (2-Chloroe	thyl)ether	330	Ü	340	Ū	86	*	78	¥	330 U	• •	*
2-Chloropheno	1	330	บ	340	Ū	82	*	70	*	330 U		*
1.3-Dichlorob	enzene	330	Ū	340	บ	74	*	73	ş	330 U	~ -	*
1,4-Dichlorobenzene		330	Ū	340	Ū	72	*	74	ž	330 U	• •	چ
1,2-Dichlorobenzene		330	Ū	340	Ū	79	*	80	*	330 U		*
2-Methylphenol		330	Ü	340	บ	85	ş	85	*	330 U		r F
2,2'-oxybis(1-Chloropropane)_		330	บ	340	ับ	84	*	77	*	330 U		ક્ર
4-Methylpheno	1	330	บ	340	บ	84	*	82	*	330 U	· -	*
N-Nitroso-di-	n-propylamine	330	υ	340	บ	81	*	82	옿	330 U	80	ક
Hexachloroeth	ane	330	U	340	U	72	*	76	*	330 U	77	*
Nitrobenzene_		330	U	340	U	79	*	75	¥	330 U	80	¥
Isophorone		330	υ	340	ប	76	*	80	*	330 U	78	ક
2-Nitrophenol		330	U	340	υ	77	*	78	¥	330 U	78	ક
2,4-Dimethylp	henol	330	U	340	U	68	*	80	왐	330 U	72	*
bis(2-Chloroe	thoxy) methane	330	U	340	บ	81	¥	82	윻	330 U	82	*
2,4-Dichloropl		330	U	340	U	78	¥	78	*	330 U	78	왐
1,2,4-Trichlo	robenzene	330	ט	340	U	78	*	76	¥	330 U	79	ક્ષ
Naphthalene		330	U	340	U	. 72	¥	72	¥	330 U	73	*
4-Chloroanili	ne	330	Ŭ	340	U	89	¥	. 88	*	330 U	87	≹
Hexachlorobut	adiene	330	บ	340	U	86	¥	89	*	330 U	90	*
4-Chloro-3-med	thylphenol	330	U	340	U	83	*	86	ሄ	330 U	80	*
2-Methylnapht	halene	330	U	340	U	83	¥	84	ક્ર	330 U		ક
Hexachlorocyc:	lopentadiene	330	U	340	U	73	¥	72	ŧ	330 U		*
2,4,6-Trichlo	rophenol	330	U	340	U	72	*	73	¥	330 U	70	ક
2,4,5-Trichlorophenol		840	Ú	850	บ	89	*	84	k	830 U	80	왐

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						J03CH						SBLKLB BS	٠
	RFW#:	007	,	013	.	013 M	S	013 MS	SD.	05LE0489-N	в 1	05LE0489	- M B
-Chloronaphthalene		330	U	340	U	82	*	81	*	330	TY	80	
		840	Ü	850	Ū	84	*	87	8	830	Ü	. 80	
imethylphthalate		330	ט	340	บั	87	ş	87	ž	330	Ū	79	
acenaphthylene		330	Ü	340	บ	82	¥	82	¥	330	Ü	78	
,6-Dinitrotoluene		330	Ū	340	Ü	91	ž	92	ž	330	บ	81	
-Nitroaniline		840	Ū	850	Ü	: 95	š	96	*	830	Ü	89	
1		330	U .	340	Ü	84	8	84	ž	330	Ü	79	
,4-Dinitrophenol		840	UJ	850	UJ	41	ş		* %	830	Ü	8	
-Nitrophenol	·	840	บ	850	Ü	61	*	61	*	830	Ū	57	
		330	Ü	340	ט	85	ž	88	*	330	U	82	
2,4-Dinitrotoluene		330	-	340	Ū	88	*	88	*	330	Ü	. 80	
Diethylphthalate			IN UB	340	Ū	90	8	91	*	30	J	79	
-Chlorophenyl-phenyleth	er	330		340	Ü	86	*	89	*	330	Ū	83	
luorene		330	U	340	_	85	8	85	*	330	Ü	78	9
luorene		840	Ü	850	Ū ·	84	*	79	8	830	ט	70 79	
,6-Dinitro-2-methylphen	lol	840	Ū	850	บ	90	*	77	*	830	Ü	58	
-Nitrosodiphenylamine (1)	330	Ü	340	Ü	75	ક	79	ş	330	Ū	71	
-Bromophenyl-phenylethe	r	330	Ū	340	ប	90	*	94	ž	330	Ū	85	
lexachlorobenzene		330	Ū	340	Ū	108	*	108	*	330	บ	95	
Pentachlorophenol		840	Ü	850	U	102	*	107	*	830	Ū	88	
Phenanthrene		330	ับ	340	บ	87	*	90	*	330	Ū	81	
nthracene		330	Ü	340	Ū	87	*	91	*	330	Ū	80	٠.
Carbazole		330	บ	340	U	100	8	100	¥	330	U	88	
oi-n-butylphthalate		660 850		340	Ū	95	*	97	*	19	J	86	
luoranthene		330	U	340	บ	95	¥	99	*	330	Ü	86	
Pyrene		330	Ū	340	Ū	79	*	79	*	330	U	78	
sutylbenzylphthalate		330	Ū	340	U	85	*	85	*	330	Ū	83	
,3'-Dichlorobenzidine_		330	Ū	340	Ū	101	ક્ર	100	*	330	U	97	
enzo(a)anthracene		330	Ū	340	Ū	75	ş	73	*	330	υ	71	
hrysene		330	U	340		77	¥	76	웋	330	U	74	
is (2-Ethylhexyl) phthala	te	6 60 2 9 0 K		LIO 75,0	, J B ∪		*	78	8	38	Ĵ	80	
i-n-octyl phthalate		330	II.	340	U	80	¥	80	*	_	Ū	81	
enzo(b)fluoranthene		330		340		102	*	102	r	330	_	103	,
enzo(k)fluoranthene		330	Ū	340	Ü	76	8	72	*		Ü	73	!
		330	Ü	340	_	92	*	88	*	330		86	:
ndeno(1,2,3-cd)pyrene		330	ט	340		105	ł	102	*	330		94	
ibenz(a,h)anthracene		330		340		104	*	101	*	330		93	;
enzo(g,h,i)perylene		330			Ü	111	8.	104	*	330		89	!

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Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD B05-018

LVL #: 0506L713

SDG/SAF # H3206/B05-018

W.O. #: 11343-606-001-9999-00 Date Received: 06-09-2005

SEMIVOLATILE

Two (2) soil samples were collected on 06-07-2005.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 06-12-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 06-14-2005.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. Samples were extracted and analyzed within required holding time.
- 3. Non-target compounds were detected in these samples.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. One (1) of one hundred twenty-eight (128) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 6. One (1) of sixty-four (64) blank spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 7. The method blank contained the common laboratory contaminants Diethylphthalate, Bis (2-Ethylhexy) phthalate and Di-n-butylphthalate at levels less than the CRQL.
- 8. Internal standard area and retention time criteria were met.
- 9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
- 10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 11. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

air Daniels

Laboratory Manager

Lionville Laboratory Incorporated

som\gorup\data\bna\tmu-hanford\0506-713.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 8 pages.

Lionville Laboratory Sample Discrepancy Report (S	DR) SDR #: <u>05/15200</u>
Date: 15 June 2005 Samples: MS 6 Spiles	Parameter: SV Matrix: Soit Prep Batch: 051E0489-
	 -
3. Discussion and Proposed Action Other Description: Re-log Entire Batch Following Samples: // PRRPTE Re-leach Re-extract	
Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle)	· l·c
4. Project Manager Instructionssignature/date: Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative Client Contacted: Date/Person Add Cancel	100
5. Final Actionsignsture/date:	·
Route Distribution of Completed SDR Route Distribution X Initiator Metals: E X Lab General Manager: M. Taylor Inorganic X Project Mgr. Stone/Johnson/Hasiett GC/LC: I	of <u>Completed</u> SDR Beegle :: Perrone Kiger hlak/kayman

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Page 4 of 4

Bechtel Hanfo	rd Inc.	C	HAIN OF CUST	TODY/S	AMPLE	ANAL	YSIS	RE	QUEST		B05-018-001			Page 1	of 4
Collector Doug Bowers		Comp	any Contact ig Bowers	Telephor 531-0	ne No.			Proi	lect Coordin SNER, JH		Price Code			Data Turnac	
Project Designation Horseshoe Landfill Residual	Pesticide Sampling - So	Samp	ling Location rse Shoe Landfill					SAF No. B05-018			Air Quality		7 day		
ice Chest No.	3106		Logbook No. 1173-5	COA Method of Shinment Fed Ex				ment					· ·		
Shinned To EBERLINE SERVICES (LI POSSIBLE SAMPLE HAZA	ONVILLE	Offsit	e Pronerty No. A C	7501	L38			Bill	of Lading/A	Air Bill I	No. 2	,ਦ <u>ੋ</u> ਣ	رم ده -	<u> </u>	
	•		Preservation	None	Cool 4C	Cool 40(2)	Cool 4	٤]	Cool 4C	Cool 40	·			<u> </u>	1
Special Handling and/or !	Starane		Type of Container	₽Ğ	#G	•G	∗G		aG	∎G					
Special Handling and/or Storage			No. of Container(s)	1	Ţ	<u> </u>	1		1	7					
			Volume		250mL	250mL	500m	ıL.	120mL	250ml	-				ł
	Sample anai	YSIS		See item (1) in Special Instructions	VOA - \$260A (TCL)	Semi-VOA - 8270A (TCL)	Chlori Herbicid EPA8151 Dichlorop yacesic a	les - 12.4- henox	Pesticides - BOU	PCB ₃ - 80	382	<u> </u>			
Sample No.	Matrix *	Sample Date	Sample Time		S Para =		19 10					W.	7.76		
J03CH3	SOIL	6-7-0	5 0741	χ	k	k	X	-]	χ	H				stocke,	0
J03CH4	SOIL		0.752						x			·		#1	
J03CH5	SOIL		0755					_	_x_					1	
J03CH6	SOIL		6759	<u> </u>					<u>_</u>					1	
J03CH7	SOIL		0801						<u> </u>					4	ļ
CHAIN OF POSSESSIO		Sign/Prin			SPEC	IAL INSTR	UCTIO	NS	•					•	Matrix *
Relinquished By/Removed From REF-2C 3728 (Relinquished By/Removed From	0 49 Date/Time 0 40 75 6-7-05/14 Date/Time 0 80 5 (030 Date/Time DATE/Time	Received By/Stor	ed In Died In	ne/Time	Chron Zine)	"P Metals - 60 num, Cobalt, C Mercury - 74	opper, L	ead, M	(Antimony, Ar fanganese, Mo	senic, Bar Ilybdennm	ium, Beryll , Nickel, S	kium, Be elenium	oron, Cadmium I, Silver, Vanad	i. Hum,	S=Soil SE=Sodiment SO=Solid SI=Sindge W = Water O=Oil A=Air DS=Drain Soli DU=Drain Liqu
Relinquished By/Removed From Relinquished Dy/Removed From	Date/Time	Received By for	ed in 6 905 Da	ate/Time	Pe Ro	rsonnel not: elinquish sam	available pies fro	= fo Fn 172							TaTisme WinWipe 1,=Liqual V=Vepetation X=Other
Relinquished By/Removed From	Date/Time	Received Dy/Stor	ed in Da	ate/Time		" < <u>C</u> on_(018	0	<u> </u>						
LABORATORY Received By SECTION	<u></u>			Tic	le							- 1.	D	ate/Time	
FINAL SAMPLE Disposal Me	ethod	<u>.,</u>	<u> </u>			Dispo	sed By					<u></u>	t	late/Time	· <u></u>

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	В	c	D	E
PROJECT: HC	_ (,00-276	DATA PACKAG	E: H3206	s _
VALIDATOR: *	TUP	LAB:		DATE: (6)	US
			SDG:	3206	
		ANALYSES	PERFORMED		
SW-846 8260		SW-846 8260 (TCLP)	\$W-846 8270		SW-846 8270 (TCLP)
SAMPLES/MAT	RIX				
J03C1	43 703	CJ9			
					Soi/
Technical verificati		present?	CASE NARRATIV		Yes No N/A
			ON (Levels D and		\bigcirc
			••••••••••••••		· · · · · · · · · · · · · · · · · · ·
	-		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		3
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					1
•					
					V

and the first of the control of the

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No (N/A)
Calibration blank results acceptable? (Levels D, E)	Yes No (N/A)
Laboratory blanks analyzed?	
Laboratory blank results acceptable?	• • • • • • • • • • • • • • • • • • • •
Field/trip blanks analyzed? (Levels C, D, E)	
Field/trip blank results acceptable? (Levels C, D, E)	Yes No WA
Transcription/calculation errors? (Levels D, E)	
Comments:	- F
distributable - O at Raz Ja	lon
de har labelle - (1 ed Rock JE	
bis (2-estylhosyl) phoblid - U est RQL - all	
	,
4. ACCURACY (Levels C, D, and E)	
Surrogates/system monitoring compounds analyzed?	Yes No N/A
Surrogate/system monitoring compound recoveries acceptable?	Yes No N/A
Surrogates traceable? (Levels D, E)	Yes No (N/A
Surrogates expired? (Levels D, E)	Yes No (N/A)
MS/MSD samples analyzed?	
MS/MSD results acceptable?	Yes 10 N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No(N/)
MS/MSD standards? (Levels D, E)	Yes No NA
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	Yes No N/A
Standards traceable? (Levels D, E)	
Standards expired? (Levels D, E)	Yes No 💔 A
Transcription/calculation errors? (Levels D, E)	Yes No 😘
Performance audit sample(s) analyzed?	Yes N/A
Performance audit sample results acceptable?	Yes No MA
Comments: MSD - 2,4-din propert - 1390 Jal	No 945
Les - 11 110 870 - Jall	<u>. </u>

GC/MS ORGANIC DATA VALIDATION CHECKLIST

S. PRECISION (Levels C, D, and E)	
MS/MSD samples analyzed?	
MS/MSD RPD values acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes No (1/A
MS/MSD standards expired? (Levels D, E)	Yes No 🕢
Field duplicate RPD values acceptable?	Yes No 🕼
Field split RPD values acceptable?	Yes No (N/A)
Transcription/calculation errors? (Levels D, E)	Yes No ALA
Comments: 7,4. dinitrophy - 10420 - Jall	
•	
6. SYSTEM PERFORMANCE (Levels D and E)	
Internal standards analyzed?	Yes No N/A
linternal standard areas acceptable?	•
Internal standard retention times acceptable?	
Standards traceable?	
Standards expired?	
Transcription/calculation errors?	1
Comments:	V
7. HOLDING TIMES (all levels)	\circ
Samples properly preserved?	Yes No N/A
Sample holding times acceptable?	L' 1
Comments:	

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DET	TECTION LIMITS (all
levels)	~
Compound identification acceptable? (Levels D, E)	Yes No WA
Compound quantitation acceptable? (Levels D, E)	Yes No (N)A
Results reported for all requested analyses?	
Results supported in the raw data? (Levels D, E)	Yes No (N/A)
Samples properly prepared? (Levels D, E)	Yes No NA
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes No (N/A)
Detection limits meet RDL?	Yes (No) N/A
Transcription/calculation errors? (Levels D, E)	Yes No (17)
Comments: 6 over	
9. SAMPLE CLEANUP (Levels D and E)	10
GPC cleanup performed?	•
GPC check performed?	
GPC check recoveries acceptable?	
GPC calibration performed?	
GPC calibration check performed?	•
GPC calibration check retention times acceptable?	•
Check/calibration materials traceable?	f 1
Check/calibration materials Expired?	
Analytical batch QC given similar cleanup?	1 1
Transcription/Calculation Errors?	Yes No N/A
Comments:	
	

Date:

5 October 2005

To:

Bechtel Hanford Inc. (technical representative)

From:

Project:

Horseshoe Landfill Residual Pesticide Sampling - Soil - Waste Site

600-270

Subject: Inorganics - Data Package No. H3206-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H3206 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample IO	A Sampler Davels		Validarjou	Determine
J03CJ9	6/7/05	Soil	ပ	See note 1
J03CH3	6/7/05	Soil	С	See note 1

^{1 -} ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J03CJ9) was submitted for analysis. Boron, barium, beryllium, cobalt, chromium, copper, manganese, vanadium and zinc were detected in the field blank. Under the BHI statement of work, no qualification is required.

- Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (49%), all antimony results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. The silver, antimony and selenium results in sample J03CH3 exceeded the RQL. Under the BHI statement of work, no qualification is required. All other analytes met the RQL.

Completeness

Data package No. H3206 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to a matrix spike recovery outside QC limits (49%), all antimony results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

The silver, antimony and selenium results in sample J03CH3 exceeded the RQL. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, Validation Statement of Work, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

COMPOUND	QUALIFIER	SAIVIFLES ATTECTED	112710011
	OLIALIEED	SAMPLES AFFECTED	REASON
COMMENTS:			T
SDG: H3206	TEC	Project: 600:270	

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: BECHTE	1								
Laboratory: LLI	SDG: I			1_				_	
Sample Number		J03CJ9		J03CH3					
Remarks		E. Blank							
Sample Date		6/7/05	6/7/05						
Inorganics	RQL	Result	a	Result	Q	Result	Q	Result	Q
Silver	0.2			0.43	U			T	
Arsenic	10	0.35	כ	2.7					Г
Boron	Ī	0.49		2.4					
Barium	2	0.99		90.1					
Beryllium		0.02		0.38			$L^{\scriptscriptstyle{T}}$		
Cadmium	0.2	0.02	U	0.14	U			Γ	
Cobalt		0.09		8.1					
Chromium	1	0.13		9.0			\Box		T_{-}
Copper		0.13		12.7					
Mercury	0.2	0.01	Ü	0.02	U				
Manganese		2.3	Γ	391					
Molybdenum		0.12	U	0.76	U		Γ		T
Nickel		0.17	U	11.4	Π		Π		П
Lead	5	0.19	U	4.7					
Antimony	0.6	0.31	บป	1.9	W				
Selenium	1	0.38	Ū	2.3	U		L		
Vanadium		0.13		51.9					\mathbb{I}
Zinc	1	1.7		46.6					

INORGANICS DATA SUMMARY REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0506L713

		•			reporting	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
					医卫二共享有需要求量	*******
-007	J03CJ9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Arsenic, Total	0.35 u	MG/KG	0.35	1.0
		Boron, Total	0.49	MG/KG	0.18	1.0
		Barium, Total	0.99	MG/KG	0.02	1.0
•		Beryllium, Total	0.02	MG/KG	0.008	1.0
•		Cadmium, Total	0.02 u	MG/KG	0.02	1.0
	•	Cobalt, Total	0.09	MG/KG	0.07	1.0
		Chromium, Total	0.13	MG/KG	0.05	1.0
		Copper, Total	0.13	MG/KG	0.06	1.0
	•	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Manganese, Total	2.3	MG/KG	0.02	1.0
		Molybdenum, Total	0.12 u	MG/KG	0.12	1.0
		Nickel, Total	0.17 u	MG/KG	0.17	1.0
		Lead, Total	0.19 u	MG/KG	0.19	1.0
	. •	Antimony, Total	0.31 u	∕mg/kg	0.31	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Vanadium, Total	0.13	MG/KG	0.05	1.0
		Zinc, Total	1.7	MG/KG	0.04	1.0

Molilos

INORGANICS DATA SUMMARY REPORT 06/22/05

CLIENT: TNUHANFORD 805-018 H3206 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0506L713

				•	REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
******		*********	******		2222222	******
-013	J03CH3	Silver, Total	0.43 น	MG/KG	0.43	6.0
		Arsenic, Total	2.7	MG/KG	2.1	6.0
		Boron, Total	2.4	MG/KG	1.1	6.0
		Barium, Total	90.1	MG/KG	0.09	6.0
		Beryllium, Total	0.38	MG/KG	0.05	6.0
		Cadmium, Total	0,14 u	MG/KG	0.14	6.0
		Cobalt, Total	8.1	MG/KG	0.43	6.0
		Chromium, Total	9.0	MG/KG	0.33	6.0
		Copper, Total	12.7	MG/KG	0.38	6.0
		Mercury, Total	0,02 u	MG/KG	0.02	1.0
		Manganese, Total	391	MG/KG	0.09	6.0
		Molybdenum, Total	0.76 u	MG/KG	0.76	6.0
		Nickel, Total	11.4	MG/KG	1.0	6.0
		Lead, Total	4.7	MG/KG	1.2	6.0
		Antimony, Total	1.9 u	MG/KG	1.9	€.0
	•	Selenium, Total	2.3 u	MG/KG	2.3	6.0
		Vanadium, Total	51.9	MG/KG	0.28	6.0
		Zinc, Total	46.6	MG/KG	0.24	6.0

10/1/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD B05-018

LVL#: 0506L713

SDG/SAF#: H3206/B05-018

W.O.#: 11343-606-001-9999-00

Date Received: 06-09-05

METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

- The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Sample J03CH3 was analyzed with a 6-fold dilution for ICP metals due to sample matrix.
- 3. All analyses were performed within the required holding times.
- 4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 8. All ICP Interference Check Standards were within control limits.
- 9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
- 10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- 11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 00014.

		<u>PDS</u>	<u>PDS</u>
Sample ID	<u>Element</u>	Concentration (ppb)	% Recovery
J03CH3	Manganese	6000	101.9
	Antimony	600	103.4

- 12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
- 13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

jjw/m06-713

7/8/0x



Bechtel H	anford Inc.		CH	HAIN OF CUST	CODY/S	AMPL	E ANAL	<u>YSIS</u>	REQUEST			B05-018-001		Page 4 of 4	
Collector Doug Bowers			Comma	nny Contact g Bowers	Telenhor 531-07	re No.			Project Coordinator KESSNER, JH			Price Code		Data Turnaround	
Project Designation Horseshoe Landfill Re	rsidual Pesticide Sampling - Sc			ing Location se Shoe Landfill					SAF No. :B05-018			Air Quali	ty 	7 d	ev_
Ice Chest No.	03 106			Logbook No. 1173-5		COA R60270	COA Nethod of Shipment R602702000 Fed Ex					(,)			
Shipped To EBERLINE SERVICE POSSIBLE SAMPLE	ES (LIONVILLE) HAZARDS/REMIARKS		Offsite	Property No. AC	X0:	238	ر ا	Į	Bill o	f Ladine/A	Air Bill I	No. δε	7505/2	د	}
NA				Preservation	None	Cool,4C	. 4	Cont 4	<u> </u>	Cool 45	Conf 40	·c			
Special Handling an	id/or Storage			Type of Container	1		 	. 1			1	-	 	<u> </u>	
N n−		-		No. of Container(s) Volume	250mL	250mL	250mL	500n	nt.	120mL	250ml	-	 		
,	· SAMPLE ANAL	YSIS	_		See item (1) in Special Instructions.	VOA - \$260 (TCL)	Semi-VOA - 8270A (TCL)	Chlor Herbicid EPA\$151 Dichlorop yacetic i	les - 2,4- henox	Pesticules – 806 t	PCBs - M	082			
Sample No.	Matrix *	Sample	Date	Sample Time								i de		A	1.50
J03CJB	SOIL	6-7	7.05	0931						X				#16	
J03CJ9	SOIL	6-7	-05	0730	<u> </u>	上上	1×	<u> </u> }	<u>. .</u>	x	2		_	Fulls	4040
							-	<u> </u>				_	-	<u> </u>	
							 -	 	_				-		
CHAIN OF POSSI	ESSION	Sign	/Print	Names		SPE	CIAL INSTE	LUCTIO	NS						Matrix *
Relinquished By/Removed Fre Relinquished By/Removed Fre REFZC 37 Z8 Relinquished By/Removed Fre SIMALIS All Selinguished Relinguished R	on 1049 Date/Time Bowers 6-7-05 //e/ on Date/Time C 8 0 S / 030 om Date/Time Date/Time Date/Time Date/Time Date/Time Date/Time Date/Time	Received I	By/Store By/Store By/Store By/Store By/Store	d in Da Da Da Da Da Da Da Da Da Da Da Da	nte/Time 05//6/ nte/Time 05/03 nte/Time nte/Time te/Time	(1) Chr Zink	ICP Metals - 60	toA (SW- Copper, L 71 - (CV) t availab	-846) (Ai ead, Man ele to	nganesé. Mol		•	Boron, Cadmium um. Silver. Vanad		S=Sort SE=Scribincut SO=Solid SI=Shidge W = Winer CO=OH 4 = Air DS=Pharm Solids DL=Ottom Liquid Y=Tissue W!=U bp L=Lisquid L=Cribic X=Cribic X=Cribic
1200 Michigan	ived By				Tille	:				-			D	ite/Time	
SECTION FINAL SAMPLE Dispublished Dispusion	esal Method						Dispo	sed By		· · ·		· 	D	ate/Time	

Bechtel Hanf	ord Inc.	(CHAIN OF CUST	rody/s	AMPLE	CANAL				B05	5-018-001	Page I	บ <u>เ</u>
Collector Doug Bowers			DRILY Contact Dug Bowers	Telepho 531-0		· .		roiect Coordi ESSNER. JH	nator P	rice Code		Data Tu	rnaround
Project Designation Horseshoe Landfill Residua	al Pesticide Sampling - Se		nling Location orse Shoe Landfill			-	1	AF No. 05-018	A	ir Quality	, ,	7 de	<u> </u>
Ice Chest No.	03106	Field	I Logbook No. L 1173-5		COA R6027020		М	ethod of Ship Fed Ex	ment			/	
Shinned To EBERLINE SERVICES POSSIBLE SAMPLE HAZ	LIONVILLE			7501	138		В	ill of Lading/	'Air Bill No	, ३५४	3 05 pc	 _ _	
POSSIBLE SAMPLE HAZ	CARDS/REMARKS		Preservation	None	Cool 4C	Cool 400	Cool 4C	Cool 4C	Cool 4C			}	
Special Handling and/or	Storage		Type of Container	∎G	яG	aG	aG	∎G	#G				
Special Handling and/or	Storage		No. of Container(s)	1	İ	1	1	1	-				
			Volume	250mL	250mL	250mL	500mL	120mL	250mL				
	. SANIPLE ANA	LYSIS		See item (1) in Special Instructions.	VOA - 8250A (TCL)	Semi-VOA - 8270A (TCL)	Chloro- Herbicides - EPA\$151 (2, Dichlorophose yacotic acid)	** [PCB ₁ - 8082				
Sample No.	Matrix *	Sample Date	Sample Time							55 Tay 50			
J03CH3	SOIL	6-7-0	5 0741	X	<i>Y</i>	k	k	X	N			stocke.	10
J03CH4	SOIL	<u> </u>	0.752	<u> </u>				X		<u> </u>		#1	
J03CH5	SOIL	 _	0755					LX.		ļ <u>. </u>	<u> </u>	1	
J03CH6	SOIL	ļ <u>_</u>	0759		 	ļ	<u> </u>	k		} _	 		<u> </u>
J03CH7	SOIL	<u> </u>	0801	<u></u>	<u></u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	4	<u> </u>
CIIAIN OF POSSESSI Refinquished By/Removed From Refinquished By/Removed From REF-2 3728 Relinquished By/Removed From SJAALES JOACH	Do 49 Date/Time	Received By/Sta S J GA-L& Received By/Sta	ored in Da C 1714 6-705 ored in Da C 490L 6 805 ored in Da	te/Time	(1) IC Chron Zinc)		IOA (SW-846 Copper, Lead,	o) (Antimony, Ai Manganese, Mo					Matrix.* S=Soli SE=Sediment SO=Solid SI=Shidge IV = Water O=Oli A=Air DS=Dhinn Solic DL=Orem Liqu
Relinguished By/Removed From Relinguished By/Removed From Relinguished By/Removed From	Date/Time	Received by lo	ored in Dai	le/Time	Pei	rsonnel not a elinquish sam f# 2 Con (vailable to	728 2.5					T=Tipsic Wi=Wipc L=Liquid V=Vegetnign N=Other
LABORATORY Received B	ly			Titl		<u> </u>					De	ate/Time	<u></u>
SECTION FINAL SAMPLE Disposal M DISPOSITION	1ethod		,	· · · · · · ·		Dispos	sed By				Di	ate/Time	

Appendix 5

Data Validation Supporting Documentation

<u>V</u> ALIDATION LEVEL:	Α	В		D	Е
PROJECT: HS	lf co	0-270	DATA PACKAG	E: #32	26
VALIDATOR:	10	LAB:] [3	7	DATE: /0/1	105
			SDG: /	13206	
	······································	ANALYSES 1	PERFORMED		
SW-846/JOP	SW-846/GFAA	W-846/Hg	SW-846 Cyanide		
SAMPLES/MAT	RIX				
5030	H3 -	703039			
		<u> </u>			
					
					50,1
Technical verificat		present?			Yes N N/A
-			LIBRATIONS (Le		Yes No N/A
					Yes No N/A
	•				j
	-			•••••	1
Standards traceabl	e?				Yes No N/A
Standards expired	?				Yes No N/A
					Yes No N/A
Comments:					<u>~</u>

Yes No N/A
Yes NO NA
Yes No N/A
Yes No N/A
Yes No N
Yes No NA
no FB
(Yes) No N/A
Yes 🕅 N/A
Yes No 🕥
Yes No WA
No N/A
Yes No N/A
Yes No (N/A)
Yes No WA
Yes No NA
Yes (No) N/A
Yes No N/A
no PAS

5.	PRECISION (Levels C, D, and E)			
	cate RPD values acceptable?			
Duplic	cate results acceptable?	(Yes) N	0	N/A
MS/M	ISD standards NIST traceable? (Levels D, E)	Yes N	lo (MY)
MS/M	ASD standards expired? (Levels D, E)	Yes N	lo	N/A
Field c	duplicate RPD values acceptable?	Yes N	lo (MY
Field s	split RPD values acceptable?	Yes N	io (N/A
Transc	cription/calculation errors? (Levels D, E)	Yes N	lo (N/A
Comm	ments:			·
6.	ICP QUALITY CONTROL (Levels D and E)		. /	\bigcap
	serial dilution samples analyzed?			
	serial dilution %D values acceptable?			
	post digestion spike required?			
	post digestion spike values acceptable?			
	dards traceable?			
	dards expired?			
Trans	scription/calculation errors?	Yes	No	N/A
Com	ments:			<u> </u>
				

7.	FURNACE AA QUALITY CONT	TROL (Leve	ls D and	E)				1	\sim
Duplic	cate injections performed as required?	,					Yes	No	N/A
Duplio	cate injection %RSD values acceptable	?					Yes	No	N/A
Analy	tical spikes performed as required?			*************			Yes	No	N/A
Analy	tical spike recoveries acceptable?						Yes	No	N/A
Standa	ards traceable?						Yes	No	N/A
Standa	ards expired?						Yes	No	N/A
MSA	performed as required?						Yes	No	N/A
MSA:	results acceptable?			************			Yes	No	N/A
Transo	cription/calculation errors?						Yes	No	N/A
Comn	nents:								\subseteq
							· .		
			<u> </u>			<u> </u>	· -		
				•		•			
8.	HOLDING TIMES (all levels)			•					
Samp	les properly preserved?						(Ye	No	N/A
•	le holding times acceptable?							No	N/A
_	nents:								
					<u> </u>		<u> </u>		

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)			
Results reported for all requested analyses?	(es)	No	N/A
Rresults supported in the raw data? (Levels D, E)	Yes	No	(N/A)
Samples properly prepared? (Levels D, E)	Yes	No	N/A)
Detection limits meet RDL?	Yes	(P)	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A
Comments: H3- Silve ore			
Cartina - Doots			
H3 - gring our H3 - slene our		·	
HJ - Slenman			

Appendix 6

Additional Documentation Requested by Client

INORGANICS PRECISION REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9999-00

			INITIAL			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	FACTOR (REP)
*****	************	*********	*****	######################################	THEETER	*****
-013REP	J03CH3	Silver, Total	0.43u	0.43u	NC	6.0
		Arsenic, Total	2.7	2.4	11.8	6.0
		Boron, Total	2.4	1.3	59.5	6.0
		Barium, Total	90.1	78.6	13.6	6.0
	•	Beryllium, Tobal	.0.38	0.36	7.7	6.0
		Cadmium, Total	0.14u	0.14u	NC	6.0
		Cobalt, Total	8.1	7.3	10.4	6.0
	·	Chromium, Total	9.0	8.2	9.3	6.0
		Copper, Total	12.7	10.7	17.1	6.0
	•	Mercury, Total	0.024	0.01u	NC	1.0
		Manganese, Total	391	336	15.0	6.0
		Molybdenum, Total	0.7 6 u	0.76u	NC	6.0
		Nickel, Total	11.4	9.4	19.2	6.0
		Lead, Total	4.7	3.2	38.0	6.0
		Antimony, Total	1.9 น	1.9 u	NC	6.0
		Selenium, Total	2.3 u	2.3 u	NC	6.0
•		Vanadium, Total	51.9	45.5	13.1	6.0
		Zinc, Total	46.6	41.5	11.6	6.0

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9999-00

			SAIKED	SATERD		
SAMPLE	SITE ID	ANALYTE	SAMPLE	AMOUNT	UNITS	*RECOV
	*************	*************	*****	*****	*****	
LCS1	05L0334-LC1	Silver, LCS	49.8	50.0	MG/KG	99.6
		Arsenic, LCS	955	1000	MG/KG	95.5
	•	Boron, LCS	479	500	MG/KG	95.8
		Barium, LCS	497	500	MG/KG	99.4
		Beryllium, LCS	24.6	25.0	MG/KG	98.4
		Cadmium, LCS	24.8	25.0	MG/KG	99.2
		Cobalt, LCS	252	250	MG/KG	100.9
		Chromium, LCS	50.6	50.0	MG/KG	101.2
		Copper, LCS	127	125	MG/KG	101.8
		Manganese, LCS	76.0	75.0	MG/KG	101.3
		Molybdenum, LCS	508	500	MG/KG	101.6
		Nickel, LCS	201	200	MG/KG	100.6
		Lead, LCS	250	250	MG/KG	100.2
		Antimony, LCs	295	300	MG/KG	98.5
		Selenium, LCS	932	1000	MG/KG	93.2
		Vanadium, LCS	246	250	MG/KG	98.6
		Zinc, LCS	99.3	100	MG/KG	99.3
LCS1	05C0142-LC1	Mercury, LCS	6.4	6.2	MG/KG	102.7

INORGANICS ACCURACY REPORT 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9999-00

			SPIKED	INITIAL	SPIKED	*	DILUTION
SAMPLE	SITE ID	ANALYTE	Sample	RESULT	TRUDOMA	*RECOV	FACTOR (SPK)
******	***********	**************	******	*****			*******
-013	J03CH3	Silver, Total	3.8	0.43u	3.9	97.4	6.0
		Arsenic, Total	158	2.7	157	98.8	6.0
		Boron, Total	72.8	2.4	78.5	89.7	6.0
		Barium, Total	226	90.1	157	86.6	6.0
•		Beryllium, Total	4.3	0.38	3.9	100.4	6.Q
		Cadmium, Total	3.9	0.14u	3.9	100	6.0
		Cobalt, Total	46.4	8.1	39.2	97.7	6.0
		Chromium, Total	23.9	9.0	15.7	94.9	6.0
		Copper, Total	30.8	12.7	19.6	92.3	6.0
		Mercury, Total	0.16	0.024	0.1	105.2	1.0
		Manganese, Total	390	391	39.2	-3.1*	6.0
		Molybdenum, Total	76.3	0.76u	78.5	97.2	6.0
		Nickel, Total	48.7	11.4	39.2	95.2	6.0
		Lead, Total	42.0	4.7	39.2	95.2	6.0
		Antimony, Total	19.2	1.9 u	39.2	49.0	6.0
		Selenium, Total	153	2.3 u	157	97.6	6.0
		Vanadium, Total	89.8	51.9	39.2	96.7	6.0
		Zinc, Total	80.6	46.6	39.2	86.7	6.0

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/22/05

CLIENT: TNUHANFORD B05-018 H3206 WORK ORDER: 11343-606-001-9989-00

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	PACTOR
*****	********	*******	=======	***	三 东刀 李章 表生 李章 章	****
BLANK1	05L0334-MB1	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Armenic, Total	0.45 u	MG/KG	0.45	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	0.05	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Cobalt, Total	0.09 u	MG/KG	0.09	1.0
		Chromium, Total	0.07 u	MG/KG	0.07	1.0
		Copper, Total	0.08 u	MG/KG	0.08	1.0
		Manganese, Total	0.02	MG/KG	0.02	1.0
		Molybdenum, Total	0.16 u	MG/KG	0.16	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Lead, Total	0.25 u	MG/KG	0.25	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.49 u	MG/KG	0.49	1.0
	•	Vanadium, Total	0.06 u	MG/KG	0.06	1.0
•	•	Zinc, Total	0.05	MG/KG	0.05	1.0
BLANK1	05CD142-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0